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## General

### Manual Scope

This manual is intended for use by experienced technicians familiar with similar types of communication equipment. It contains all service information required for the equipment and is current as of the publication date.

### Precautions

#### ■ Safety Standards

- DO NOT operate your radio when someone is either touching or standing within 2 or 3 feet from the antenna, to avoid the possibility of radio frequency burns or related physical injury.
- DO NOT operate the radio near electrical blasting caps or in an explosive atmosphere.
- Switch OFF the radio while refueling or parking at gas station.
- Turn off your radio in any place where posted notices instruct you to do so.
- DO NOT modify the radio for any reason.
- DO NOT expose the radio to direct sunlight over a long time, nor place it close to heating source.
- DO NOT place the radio in excessively dusty, humid areas, nor on unstable surfaces.
- Refer the service to qualified technicians only.

#### ■ Operation Safety Guidelines

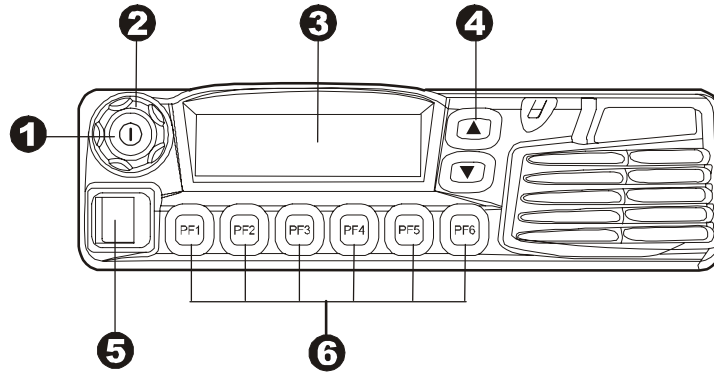
- For vehicles equipped with electronic anti-skid braking systems, electronic ignition systems or electronic fuel injection systems, interferences may occur during the radio transmission. If the foregoing electronic equipments are installed on your vehicle, please contact your dealer for further assistance to make sure that the radio transmission will not interfere with these equipments.
- For radio installation in vehicles fueled by LP gas with LP gas container within interior of the vehicles, the following precautions are recommended for personal safety.
  - (1) Any space containing radio equipment shall be isolated by a seal from the space in which the LP gas container and its fittings are located.
  - (2) Remote (outside) fitting connections shall be used.
  - (3) Good ventilation is required for the container space.

#### ■ Installation Safety Guidelines

- Do not mount the mobile radio overhead or on a sidewall unless you take special precautions.
- If someone were to remove the radio and fail to replace it properly, road shock could bump the radio loose, and the falling radio could, in some circumstances, cause serious injury to the driver or a passenger. In a crash, even when properly installed, the radio could break loose and become a dangerous projectile.

## Radio Overview

### Front Panel View



① **Power**

Press the power button to switch the radio on/off.

② **Selector Knob**

Volume Up/Down, Channel Up/Down, Zone Up/Down features can be programmed to this knob (Set by your dealer).

Turn the knob clockwise to adjust upwards and counter-clockwise to adjust downwards.

③ **LCD Display**

Please refer to “LCD Display” section.

④ **Up/Down Key**

Volume Up/Down, Channel Up/Down, Zone Up/Down features can be programmed to the keys (Set by your dealer).

⑤ **Microphone Jack**

Insert a 6-pin connector into the jack.

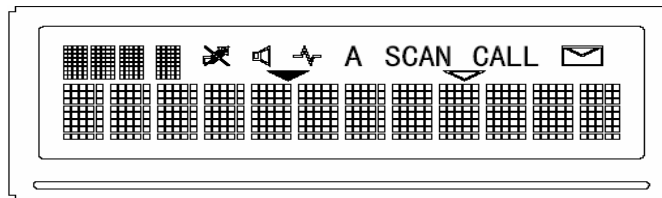
⑥ **Programmable Function Key (PF1-PF6)**

Your dealer can program these keys as shortcuts to various radio features.

## Microphone

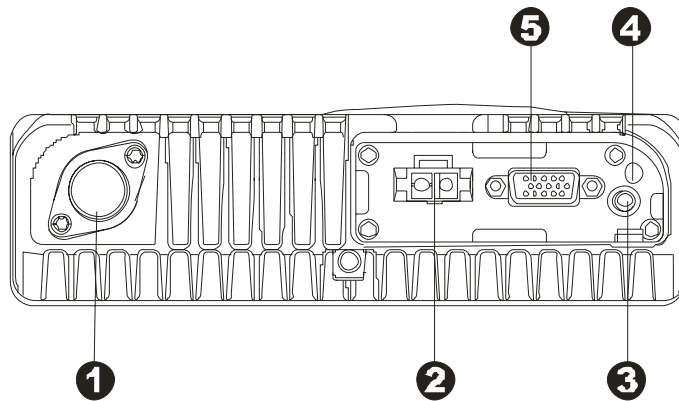


## LCD Display



Indicator	Description
	<ol style="list-style-type: none"> <li>1. Display zone / channel number.</li> <li>2. Display zone / channel label (set by your dealer, up to 12 alphanumeric characters).</li> <li>3. Display channel Frequency</li> <li>4. Display the preprogrammed function</li> </ol>
	<ol style="list-style-type: none"> <li>1. Display zone / channel number.</li> <li>2. Display transmit power level (H, M or L).</li> <li>3. Display the preprogrammed function.</li> </ol>
	Appears when the selected channel is busy.
	Appears when [MONI] key is pressed to disable CTCSS, CDCSS, DTMF or 2-Tone/5-Tone.
	Appears when [MONI] key is pressed to switch the speaker on.
A	<ol style="list-style-type: none"> <li>1. Indicate second development feature.</li> <li>2. Appears when the auxiliary port is open.</li> </ol>
SCAN	Appears while scanning.
CALL	Appears when transmitting selective call.
	Appears when a new message is received.
	Appears when the selected zone is in the scan list.
	Appears when the selected channel is in the scan list.

## Rear Panel View

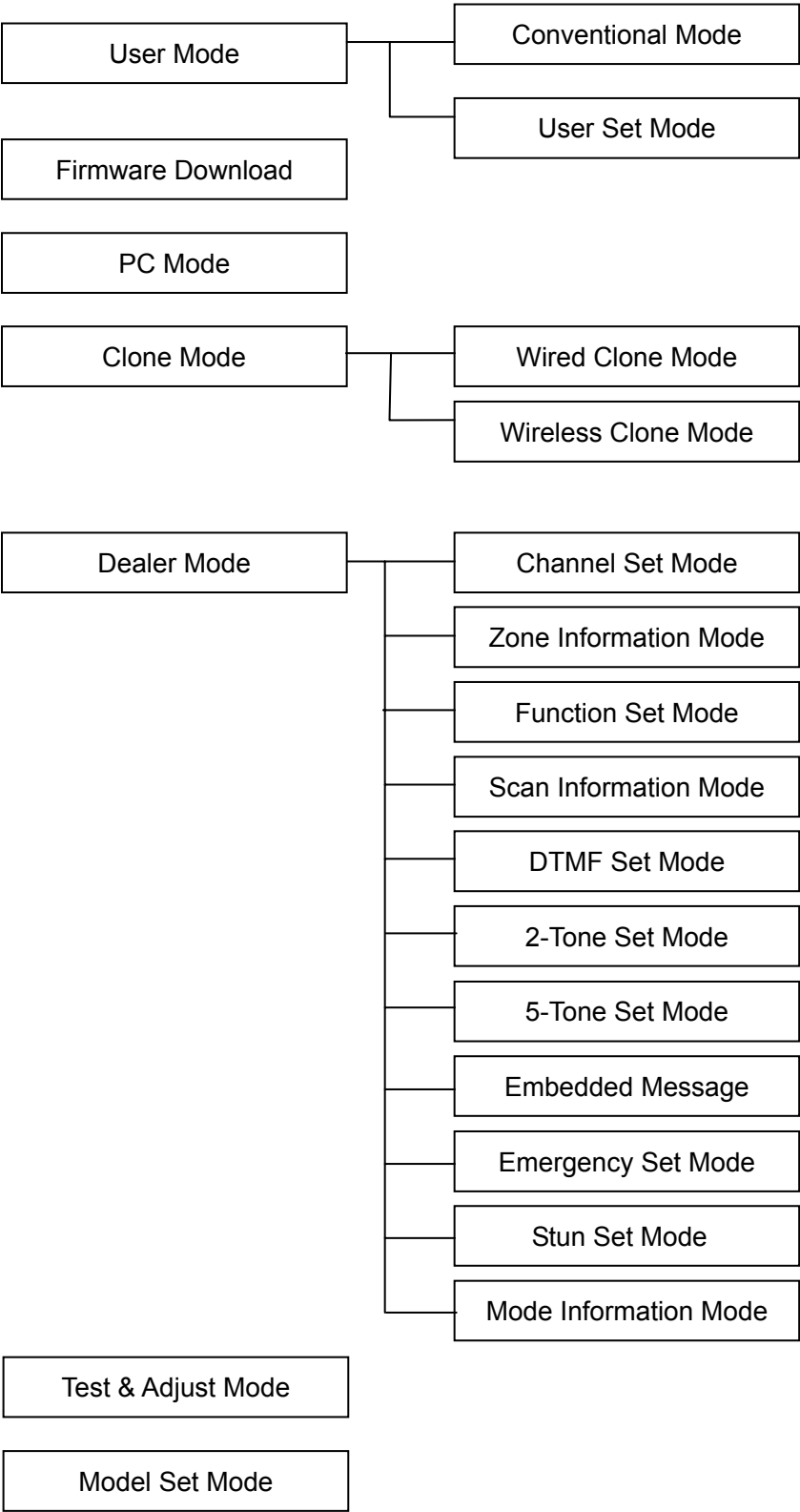


- ① Antenna Connector  
Used to connect external antenna.
- ② Power input Connector  
Adopt Relm-authorized DC power cable and 13.6 V input AC power.
- ③ Speaker Jack  
Used to connect external speaker and only available for the plug of 3.5 mm.
- ④ GPS Antenna Jack
- ⑤ 15 Pin Connector (for accessories)

Software Specification

Radio Modes

1. Frame of Radio Modes



## 2. Keypad Entry for Mode Startup

MODE	Main Menu	Display/Sub Menu	Operation	Remarks
USER MODE	Conventional Mode	-----	Turn on the power to enter Conventional Mode	
	User Set Mode	Function Set	While holding down [PF1] key, turn on the power	
		PowerOn Text		Refer to Appendix 1 "Character Input"
		PWR Password		Power on password set
		Ust Code		
		Hook & Moni		Programmable Function Key
		Key Assign		
DEALER MODE	Channel Set Mode	Channel Set	Turn on the power while holding down [PF6] key to enter Dealer Mode, select one of Menu items.	New zone & ch, edit ch
	Zone Information Mode	Zone Inform		Only existing Zone can be edited
	Function Set	Function 1		
		Function 2		
		Tone Volume		
		Alert Tone		
		Aux Inform		
		Data Password		
	Scan Information	Scan Set		
		Zone Scan List		
	DTMF Set Mode	DTMF Encode		
		DTMF Decode		
		Auto Dial List		
		PTT ID		
	2 Tone Set Mode	2Tone Encode		
		2Tone Decode		
		2Tone Option		
	5 Tone Set Mode	Parameter		
		Encode Teleg		
		Encode Frame		
		Encode Option		
		Decode Teleg		
		Decode Option		
	Embedded Message	Embedded Msg1		32 bytes
		Embedded Msg2		32 bytes
		Embedded Msg3		32 bytes
		Embedded Msg4		32 bytes
		Msg Password		Protect Msg
	Emergency set	Emergency Set		
	Stun Set	Stun Inform		
		Stun Password		Password Authentication
	Mode Information	Mode Select		Password Authentication
		Mode Password		

TEST & ADJUST MODE	Test Mode	----- -	While holding down [PF2] key, turn on the power	
	ADJUST MODE	----- -		
	Model Set Mode	----- -		
Firmware Version Display Mode		----- -	While holding down [PF3] key, turn on the power	
Firmware Down Load Mode		----- -	While holding down [PF4] key, turn on the power	
Wire Clone Mode		----- -	While holding down [PF5] key, turn on the power	
PC Mode		----- -	Receive commands from PC	

### Note:

When power-on password is enabled, you can enter User Mode only after inputting correct password. And if data password is enabled, you can enter Dealer Mode only after inputting correct data password. You can input password through the keypad and press [#] to clear.

### 3. User Set Mode

- Turn the power on while holding down [PF1], the radio enters User Set Mode after inputting correct power-on password (if Power-On Password is set). The submenus are shown as follows:

Sub Menu	Menu Item
1	Function Set
2	PowerOnText
3	PWR Password
4	UST Code
5	Hook & Moni
6	Key Assign

- Press [PF6] to enter the selected submenu.
- Adjust settings through the Selector Knob.
- Press [PF6] to save the change and enter the next item.
- Press [Up]/ [Down] to select your desired menu item.
- Press [PF1] to return to User Set Mode.



## ■ Function Set

Select submenu "Function Set", then press [PF6] to enter Function Set Mode.

No.	Function Name	Settings	Display	Remarks
1	Home Channel	Home Off	Home Off	
		Home 1 On	Home 1 On	
		Home 2 On	Home 2 On	
		Home Both On	Home Both On	
		Zone Home Channel	Home Zone	
2	Home Channel 1	Zone	1	Selector Knob: change a zone/ch
		Channel	Home1 1	[PF5]: toggle between zone and ch
3	Home Channel 2	Zone	1	Selector Knob: change a zone/ch
		Channel	Home2 1	[PF5]: toggle between zone and ch

## ■ Power On Text

Select submenu "PowerOnText", press [PF6], the power-on text is displayed. Press [PF1] to edit the power-on text.

No.	Function Name	Settings	Display	Remarks
1	Power On Text	None	-----	Refer to Appendix 1 "Character Input" Max.12 characters
		Power on text	Relm MOBILE	

## ■ Power On Password

Select submenu "PWR Password", press [PF6], the power-on password is displayed. Press [PF1] to edit the power-on password.

No.	Function Name	Settings	Display	Remarks
1	Power On Password	None	-----	Refer to Appendix 1 "Character Input" Max. 8 digits
		Power on password	88888888	

# ■ UST Code

Select submenu "UST Code", press [PF6] to enter UST Code Mode.

No.	Function Name	Settings	Display	Remarks
1	UST Code No.	1-32	UST 1	
			UST 32	
2	UST Code Name	ASCII CODE	Name	
			-----	No input
3	RX Signalling	OFF	R Off	[PF5]: OFF/CTCSS/CDCSS [PF4]: standard/step mode [PF3]: CDCSS/ reverse CDCSS
		CTCSS (EIA standard) 67.0-254.1Hz	R CTCSS 67.0	
			R CTCSS 254.1	
		CTCSS (0.1Hz step) 67.0-254.1Hz	R CTCSS 67.0*	
			R CTCSS 254.1*	
		CDCSS (standard) 023-754	R CDCSS 023N	
			R CDCSS 754N	
		CDCSS (1 step) 000-777	R CDCSS 000N*	
			R CDCSS 777N*	
		CDCSS (standard) 023-754 reverse	R CDCSS 023I	
			R CDCSS 754I	
		CDCSS (1step) 000-777 reverse	R CDCSS 000I*	
			R CDCSS 777I*	

4	TX Signalling	OFF	T Off	[PF5]: Off/CTCSS/CDCSS [PF4]: standard/step mode [PF3]: CDCSS/ reverse CDCSS
		CTCSS (EIA standard) 67.0-254.1Hz	T CTCSS 67.0	
			R CTCSS 254.1	
		CTCSS (0.1Hz step) 67.0-254.1Hz	T CTCSS 67.0*	
			T CTCSS 254.1*	
		CDCSS (standard) 023-754	T CDCSS 023N	
			T CDCSS 754N	
		CDCSS (1step) 000-777	T CDCSS 000N*	
			T CDCSS 777N*	
		CDCSS (standard) 023-754 reverse	T CDCSS 023I	
			T CDCSS 754I	
		CDCSS (1step) 000-777 reverse	T CDCSS 000I*	
			T CDCSS 777I*	
5	END	END	END	Display "END" indicating the end of menu options

### ■ Hook & Moni

Select submenu "Hook & Moni", press [PF6] to enter Hook & Moni Mode.

NO.	Function	Setting	Display	Remarks
1	Hook & Moni	Hook	HandMic Hook	Selected when hand microphone is used
		Moni	TableMicMoni	Selected when desktop microphone is used

## ■ Key Assignment

Select submenu "Key Assign", press [PF6] to program the programmable function key PF1-PF6.

No.	Key	Settings	Display	Remarks
1	[PF1]	Off	1 PF1 Off	None
		VOL Up	2 PF1 VOL Up	Volume up
		VOL Down	3 PF1 VOL Down	Volume down
		CH Up	4 PF1 CH Up	Channel up
		CH Down	5 PF1 CH Down	Channel down
		Zone Up	6 PF1 Zone Up	Zone up
		Zone Down	7 PF1 Zone Down	Zone down
		MONI A	8 PF1 MoniA	MONI A: Monitor Unmute-Momentary
		MONI B	9 PF1 MoniB	MONI B: Monitor Unmute-Toggle
		MONI C [Default]	10 PF1 MoniC	MONI C: Carrier Squelch-Momentary
		MONI D	11 PF1 MoniD	MONI D: Carrier Squelch-Toggle
		Display Label	12 PF1 DLabel	Display channel label
		Display Frequency	13 PF1 DFreq	Display frequency
		Display Mode	14 PF1 DMode	Ch No./ch label/zone No./zone label/RX Freq.
		User Selectable Tone	15 PF1 UserTone	Tone 01-32(CTCSS/CDCSS)
		Sel 2Tone	16 PF1 Sel2Tone	Select 2-Tone encode
		Sel 5Tone	17 PF1 Sel5Tone	Select 5-Tone encode
		Sel HDC	18 PFI SelHDC	
		Tx Power	19 PF1 TxPower	Switch TX power

1	[PF1]	Scan	20 PF1 Scan	Scan
		Add/Del	21 PF1 Add/Del	Add/Del in non-scan mode
				Nuisance channel temp.Del
				Priority ch temp. del
		Reverse	22 PF1 Reverse	Reverse frequency
		Talk Around	23 PF1 TA	Talkaround
		SEL SQL	24 PF1 SelSQL	Select SQL
		Home CH	25 PF1 HomeCH	Home channel
		Public Address	26 PF1 PA	Public address
		Horn Alert	27 PF1HornAlert	Horn alert
		LCD BackLight	28 PF1LCDLight	LCD backlight
		Scrambler	29 PF1 Scramble	Scrambler
		Compander	30 PF1 Compande	Compander
		AUX A	31 PF1 AUX A	AUXA port output control
		AUX B	32 PF1 AUX B	AUXB port output control
		Send GPS	33 PF1 Send GPS	Send GPS
		Emergency Call	34 PF1Emergency	Emergency call
		Message	35 PF1 Message	Message

2	[PF2]	Off	1 PF2 Off	None
		VOL Up	2 PF2 VOL Up	Volume up
		VOL Down	3 PF2 VOL Down	Volume down
		CH Up	4 PF2 CH Up	Channel up
		CH Down	5 PF2 CH Down	Channel down
		Zone Up	6 PF2 Zone Up	Zone up
		Zone Down	7 PF2 Zone Down	Zone down
		Moni A	8 PF2 MoniA	MONI A
		Moni B	9 PF2 MoniB	MONI B
		Moni C	10 PF2 MoniC	MONI C
		Moni D	11 PF2 MoniD	MONI D
		DisplayLabel	12 PF2 DLabel	Display channel label
		Display Frequency	13 PF2 DFreq	Display frequency
		DisplayMode [Default]	14 PF2 DMode	Ch No./ch label/zone No./zone label/RX Freq.
		User Selectable Tone	15 PF2 UserTone	Tone 01-32(CTCSS/CDCSS)
		Sel 2Tone	16 PF2 Sel2Tone	Select 2-Tone encode
		Sel 5Tone	17 PF2 Sel5Tone	Select 5-Tone encode
		Sel HDC	18 PF2 SelHDC	
		Tx Power	19 PF2 TxPower	Switch TX power
		Scan	20 PF2 Scan	Scan
		Add/Del	21 PF2 Add/Del	Add/Del as not in scan status
				Nuisance channel temp.Del
				Priority ch temp. del

2	[PF2]	Reverse	22 PF2 Reverse	Reverse frequency
		Talk Around	23 PF2 TA	Talkaround
		Sel SQL	24 PF2 SelSQL	Select SQL
		Home CH	25 PF2 HomeCH	Home channel
		Public Address	26 PF2 PA	Public address
		Horn Alert	27 PF2Horn Alert	Horn alert
		LCD BackLight	28 PF2 LCD Light	LCD backlight
		Scramble	29 PF2 Scramble	Scrambler
		Compander	30 PF2 Compande	Compander
		AUX A	31 PF2 AUX A	AUXA port output control
		AUX B	32 PF2 AUX B	AUXB port output control
		Send GPS	33 PF2 Send GPS	Send GPS
		Emergency Call	34 PF2Emergency	Emergency call
		Message	35 PF2 Message	Message
3	[PF3]	Off	1 PF3 Off	None
		VOL Up	2 PF3 VOL Up	Volume up
		VOL Down	3 PF3 VOL Down	Volume down
		CH Up	4 PF3 CH Up	Channel up
		CH Down	5 PF3 CH Down	Channel down
		Zone Up	6 PF3 Zone Up	Zone up
		Zone Down	7 PF3 Zone Down	Zone down

3	[PF3]	Moni A	8 PF3 MoniA	MONI A: Monitor Unmute-Momentary
		Moni B	9 PF3 MoniB	MONI B: Monitor Unmute-Toggle
		Moni C	10 PF3 MoniC	MONI C: Carrier Squelch-Momentary
		Moni D	11 PF3 MoniD	MONI D: Carrier Squelch-Toggle
		Display Label	12 PF3 DLabel	Display channel label
		Display Frequency	13 PF3 DFreq	Display frequency
		Display Mode	14 PF3 DMode	Ch No./ch label/zone No./zone label/RX Freq.
		User Selectable Tone	15 PF3 UserTone	Tone 01-32(CTCSS/CDCSS)
		Sel 2Tone	16 PF3 Sel2Tone	Select 2-Tone encode
		Sel 5Tone	17 PF3 Sel5Tone	Select 5-Tone encode
		Sel HDC	18 PF3 SelHDC	
		Tx Power [Default]	19 PF3 TxPower	Switch TX power
		Scan	20 PF3 Scan	Scan
		Add/Del	21 PF3 Add/Del	Add/Del as not in scan status
				Nuisance channel temp.Del
				Priority ch temp. del
		Reverse	22 PF3 Reverse	Reverse frequency
		Talk Around	23 PF3 TA	Talkaround
		Sel SQL	24 PF3 SelSQL	Select SQL
		Home CH	25 PF3 HomeCH	Home channel
		Public Address	26 PF3 PA	Public address
		Horn Alert	27 PF3Horn Alert	Horn alert
		LCD BackLight	28 PF3 LCD Light	LCD backlight



3	[PF3]	Scramble	29 PF3 Scramble	Scrambler
		Compander	30 PF3 Compande	Compander
		AUX A	31 PF3 AUX A	AUXA port output control
		AUX B	33 PF3 AUX B	AUXB port output control
		Send GPS	33 PF3 Send GPS	Send GPS
		Emergency Call	34 PF3Emergency	Emergency call
		Message	35 PF3 Message	Message
4	[PF4]	Off	1 PF4 Off	None
		VOL Up	2 PF4 VOL Up	Volume up
		VOL Down	3 PF4 VOL Down	Volume down
		CH Up	4 PF4 CH Up	Channel up
		CH Down	5 PF4 CH Down	Channel down
		Zone Up	6 PF4 Zone Up	Zone up
		Zone Down	7 PF4 Zone Down	Zone down
		Moni A	8 PF4 MoniA	MONI A: Monitor Unmute-Momentary
		Moni B	9 PF4 MoniB	MONI B: Monitor Unmute-Toggle
		Moni C	10 PF4 MoniC	MONI C: Carrier Squelch-Momentary
		Moni D	11 PF4 MoniD	MONI D: Carrier Squelch-Toggle
		DispayLabel	12 PF4 DLabel	Display channel label
		Display Frequency	13 PF4 DFreq	Display frequency

4	[PF4]	Display Mode	14 PF4 DMode	Ch No./ch label/zone No./zone label/RX Freq.
		User Selectable Tone	15 PF4 UserTone	Tone 01-32(CTCSS/CDCSS)
		Sel 2Tone	16 PF4 Sel2Tone	Select 2-Tone encode
		Sel 5Tone	17 PF4 Sel5Tone	Select 5-Tone encode
		Sel HDC	18 PF4 SelHDC	
		Tx Power	19 PF4 TxPower	Switch TX power
		Scan [Default]	20 PF4 Scan	Scan
		Add/Del	21 PF4 Add/Del	Add/Del as not in scan status
				Nuisance channel temp.Del
				Priority ch temp. del
		Reverse	22 PF4 Reverse	Reverse frequency
		Talk Around	23 PF4 TA	Talkaround
		Sel SQL	24 PF4 SelSQL	Select SQL
		Home CH	25 PF4 HomeCH	Home channel
		Public Address	26 PF4 PA	Public address
		Horn Alert	27 PF4Horn Alert	Horn alert
		LCD BackLight	28 PF4 LCD Light	LCD backlight
		Scramble	29 PF4 Scramble	Scrambler
		Compander	30 PF4 Compande	Compander
		AUX A	31 PF4 AUX A	AUXA port output control
		AUX B	32 PF4 AUX B	AUXB port output control
		Send GPS	33 PF4 Send GPS	Send GPS
		Emergency Call	34 PF4Emergency	Emergency call

5	[PF5]	Message	35 PF4 Message	Message
		Off	1 PF5 Off	None
		VOL Up	2 PF5 VOL Up	Volume up
		VOL Down	3 PF5 VOL Down	Volume down
		CH Up	4 PF5 CH Up	Channel up
		CH Down	5 PF5 CH Down	Channel down
		Zone Up	6 PF5 Zone Up	Zone up
		Zone Down [Default]	7 PF5 Zone Down	Zone down
		Moni A	8 PF5 MoniA	MONI A: Monitor Unmute-Momentary
		Moni B	9 PF5 MoniB	MONI B: Monitor Unmute-Toggle
		Moni C	10 PF5 MoniC	MONI C: Carrier Squelch-Momentary
		Moni D	11 PF5 MoniD	MONI D: Carrier Squelch-Toggle
		Display Label	12 PF5 DLabel	Display channel label
		Display Frequency	13 PF5 DFreq	Display frequency
		Display Mode	14 PF5 DMode	Ch No./ch label/zone No./zone label/RX Freq.
		User Selectable Tone	15 PF5 UserTone	Tone 01-32(CTCSS/CDCSS)
		Sel 2Tone	16 PF5 Sel2Tone	Select 2-Tone encode
		Sel 5Tone	17 PF5 Sel5Tone	Select 5-Tone encode
		Sel HDC	18 PF5 SelHDC	
		Tx Power	19 PF5 TxPower	Switch TX power
		Scan	20 PF5 Scan	Scan

5	[PF5]	Add/Del	21 PF5 Add/Del	Add/Del as not in scan status Nuisance channel temp.Del Priority ch temp. del
		Reverse	22 PF5 Reverse	Reverse frequency
		Talk Around	23 PF5 TA	Talkaround
		Sel SQL	24 PF5 SelSQL	Select SQL
		Home CH	25 PF5 HomeCH	Home channel
		Public Address	26 PF5 PA	Public address
		Horn Alert	27 PF5Horn Alert	Horn alert
		LCD BackLight	28 PF5 LCD Light	LCD backlight
		Scramble	29 PF5 Scramble	Scrambler
		Compander	30 PF5 Compande	Compander
		AUX A	31 PF5 AUX A	AUXA port output control
		AUX B	32 PF5 AUX B	AUXB port output control
		Send GPS	33 PF5 Send GPS	Send GPS
		Emergency Call	34 PF5Emergency	Emergency call
		Message	35 PF5 Message	Message
6	[PF6]	Off	1 PF6 Off	None
		VOL Up	2 PF6 VOL Up	Volume up
		VOL Down	3 PF6 VOL Down	Volume down
		CH Up	4 PF6 CH Up	Channel up
		CH Down	5 PF6 CH Down	Channel down

6	[PF6]	Zone Up [Default]	6 PF6 Zone Up	Zone up
		Zone Down	7 PF6 Zone Down	Zone down
		Moni A	8 PF6 MoniA	MONI A: Monitor Unmute-Momentary
		Moni B	9 PF6 MoniB	MONI B: Monitor Unmute-Toggle
		Moni C	10 PF6 MoniC	MONI C: Carrier Squelch-Momentary
		Moni D	11 PF6 MoniD	MONI D: Carrier Squelch-Toggle
		Display Label	12 PF6 DLabel	Display channel label
		Display Frequency	13 PF6 DFreq	Display frequency
		Display Mode	14 PF6 DMode	Ch No./ch label/zone No./zone label/RX Freq.
		User Selectable Tone	15 PF6 UserTone	Tone 01-32 (CTCSS/CDCSS)
		Sel 2Tone	16 PF6 Sel2Tone	Select 2-Tone encode
		Sel 5Tone	17 PF6 Sel5Tone	Select 5-Tone encode
		Sel HDC	18 PF6 SelHDC	
		Tx Power	19 PF6 TxPower	Switch TX power
		Scan	20 PF6 Scan	Scan
		Add/Del	21 PF6 Add/Del	Add/Del as not in scan status Nuisance channel temp.Del Priority ch temp. del
		Reverse	22 PF6 Reverse	Reverse frequency
		Talk Around	23 PF6 TA	Talkaround
		Sel SQL	24 PF6 SelSQL	Select SQL
		Home CH	25 PF6 HomeCH	Home channel
		Public Address	26 PF6 PA	Public address

6	[PF6]	Horn Alert	27 PF6Horn Alert	Horn alert
		LCD BackLight	28 PF6 LCD Light	LCD backlight
		Scramble	29 PF6 Scramble	Scrambler
		Compander	30 PF6 Compande	Compander
		AUX A	31 PF6 AUX A	AUXA port output control
		AUX B	32 PF6 AUX B	AUXB port output control
		Send GPS	33 PF6 Send GPS	Send GPS
		Emergency Call	34 PF6Emergency	Emergency call
		Message	35 PF6 Message	Message
7	[SELECTOR KNOB]	Volume Knob [Default]	Volume Knob	Volume knob
		Channel Knob	Channel Knob	Channel selector knob
		Zone Knob	Zone Knob	Zone selector knob
8	[Up/Down]	Volume Up/Down	Volume UpDn	Volume knob
		Channel Up/Down [Default]	Channel UpDn	Channel selector knob
		Zone Up/Down	Zone UpDn	Zone selector knob
9	END	END	END	Display “END” indicating the end of menu option

Note: In User Set Mode, turn the power off and back on to enter the Conventional Mode.

#### 4. Firmware Download Mode

The built-in FLASHROM enables user to add new functions simply by upgrading.

- (1) Turn on the power while holding down [PF4] simultaneously to enter Firmware Download Mode, “PC Program” appears on the LCD.
- (2) Run the programming software.
- (3) Connect the radio with a PC by programming cable.
- (4) Select the corresponding COM port, then click “Download”.
- (5) When data is successfully written into the radio, click “OK” to exit.
- (6) Repeat step 1-5 to program another radio.

Note: The radio can't enter the Firmware Download Mode if it is prohibited by your dealer.

It can be set ON only after being programmed through the programming software or by your dealer.

## 5. Firmware Version Display Mode

Turn the power on while holding down [PF3] to enter Firmware Version Display Mode.

Firmware version and Firmware checksum will be displayed on the LCD.

Release [PF3] to enter User Mode.

## 6. PC Mode

Connect the radio with a PC by programming cable. If data is written to the radio from PC, it can be programmed into the FLASH. Data programming is accessible by programming software.

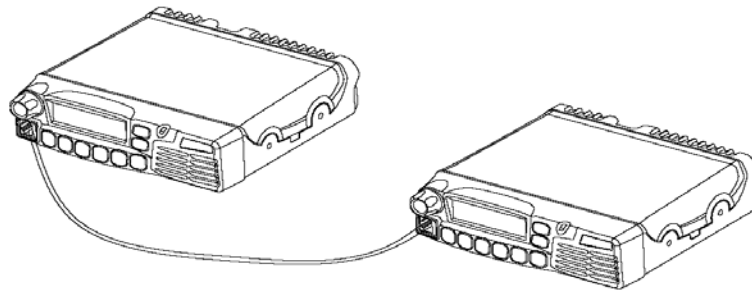
- (1) When data is written to the radio from PC, "PROGRAMMING" appears on the LCD. LED glows green when data is written to the radio and red when data is read from the radio. Radio will restart automatically when programming is completed.
- (2) The following parameters can be set through the programming software.
  - Frequency stability
  - High power
  - Middle power
  - Low power
  - Maximum frequency deviation
  - CDCSS balance
  - CTCSS deviation
  - CDCSS deviation
  - DTMF deviation
  - MSK deviation
  - Single Tone deviation
  - RX sensitivity
  - Squelch Level 9
  - Squelch Level 3

## 7. Clone Mode

Data can be transferred from radio to radio either by wired cloning or wireless cloning.

### ■ Wired Clone Mode

- (1) Turn on the source radio while holding down [PF5] simultaneously, the radio enters Clone Mode with "CLONE" on the LCD, or enters User Mode if Clone Mode is set OFF by your dealer.
- (2) Press [PF2] to toggle between Dealer Clone and Factory Clone Mode. "Dealer Clone" or "Factory Clone" appears on the display when the corresponding mode is selected. The radio returns to original display mode in 5 seconds.  
Unlike Factory Clone Mode, adjustment settings and embedded messages are not covered in Dealer Clone Mode.  
Dealer Clone Mode is the default mode.
- (3) Connect the two radios by clone cable, then turn on the target radio.
- (4) Press [PF6] to start cloning, the LED of source radio glows red and that of target radio glows green during cloning. "PROGRAMMING" is also displayed on the target radio. "END" appears on the source radio when cloning is completed and the target radio reset when all data is received.
- (5) Press [PF6] to return to Clone Mode. "CLONE" appears on the source radio. Repeat the above steps to continue wired cloning.



Note: Only the same models can be cloned together.

### Wireless Clone Mode

- (1) Turn on the source radio while holding down [PF5] simultaneously, the radio enters Clone Mode with "CLONE" on the LCD, or enters User Mode if Clone Mode is set OFF by your dealer.
- (2) Press [PF1], the radio enters Wireless Clone Mode with "WIRELESS" on the LCD. The initial frequency that matches the destination is displayed in 2 seconds. Turn the Selector Knob to choose desired frequency. Press [PF1] again to return to Clone Mode.
- (3) Press [PF2] to toggle between Dealer Clone and Factory Clone Mode. "Dealer Clone" or "Factory Clone" appears on the display when the corresponding mode is selected. The radio returns to original display mode in 5 seconds.  
 Unlike Factory Clone Mode, adjustment settings and embedded messages are not covered in Dealer Clone Mode.  
 Dealer Clone Mode is the default mode.
- (4) Repeat step1-2 to operate the target radio, the frequency is set the same as that of source radio.
- (5) Press [PF6] to start wireless cloning. The LED of source radio glows red and that of target radio glows green during cloning. "CLONE 00%" is displayed on both source and target radios. "BUSY" mark also appears on the target radio. The leftmost 2 digits (00) on the LCD show the data transfer rate and count upwards in increments of 1 as data transmission/reception proceeds.
- (6) (6) When data transmission is completed, "END" appears on the source radio and red LED goes out. Press [PF1], the source radio displays the frequency, repeat the above steps to continue wireless cloning. The target radio reset when all data is received.

Note: Clone Mode can be enabled/disabled by your dealer. Wired cloning is accessible only when Clone Mode is enabled. Refer to "Clone Mode" in "Mode Information" of "Dealer Mode".



## 8. Dealer Mode

- (1) Turn the power on while holding down [PF6], the radio enters Dealer Mode after inputting correct data password (if Data Password is set). The first activated mode option is displayed.

When all mode options are prohibited, the radio enters Mode Information Mode after a correct mode-info password (if mode-info Password is set) is entered.

Turn the Selector Knob to select one of the following mode options:

No.	Dealer Mode Option	LCD Display
1	Channel Set Mode	Channel Set
2	Zone Information Mode	Zone Inform
3	Function Set Mode	Function Set
4	Scan Information Mode	Scan Inform
5	DTMF Set Mode	DTMF Set
6	2-Tone Set Mode	2-Tone Set
7	5-Tone Set Mode	5-Tone Set
8	Embedded Message	EmbeddedMsg
9	Emergency Set Mode	EmergencySet
10	Stun Set Mode	Stun Inform
11	Mode Information	Mode Inform

- (2) Press [PF6] to enter the selected dealer mode option, and then operate as follows:
- Turn the Selector Knob to adjust the setting.
  - Press [PF6] to save the selected settings and goes to the next mode option.
  - Press [Up]/[Down] to select upwards/downwards. The current setting displayed on the LCD will not be saved.
  - Press [PF1] to return to the first mode option or Dealer Mode.

**Dealer Mode 1: Channel Set**

Select menu "Channel Set", then press [PF6] to enter Channel Set Mode.

No.	Function Name	Settings	Display	Remarks
1	Zone Channel	Channel 1-512 Step 1	1 CH 1	Selector Knob: change a channel or zone (default: ch) [PF5]: toggle between channel and zone
			1 CH 512	
		Zone 1-256 Step 1	1 CH 1	
			256 CH 1	
2	RX Frequency	2.5K/5.0K/6.25K/1M 100.0000-550.0000MHz	250 0 R 100.00000	Selector Knob: change at step frequency [PF4]: 2.5K/5.0K/6.25K/1M step Step 2.5K: only for RMU800A VHF(<200MHz)
			500 0 R 400.00000	
			625 0 R 400.00000 1M R 550.00000	
		Blank	-----	[PF5]: On/Blank
3	RX Signalling	OFF	R Off	[PF5]: Off/CTCSS/CDCSS [PF4]: standard/step mode [PF3]: CDCSS /reverse CDCSS
		CTCSS (EIA standard) 67.0-254.1Hz	R CTCSS 67.0	
			R CTCSS 254.1	
		CTCSS (0.1Hz step) 67.0-254.1Hz	R CTCSS 67.0*	
			R CTCSS 254.1*	
		CDCSS (standard) 023-754	R CDCSS 023N	
			R CDCSS 754N	
		CDCSS (1 step) 000-777	R CDCSS 000N*	
			R CDCSS 777N*	

3	RX Signalling	CDCSS (standard) 023-754 reverse	R CDCSS 023I	
			R CDCSS 754I	
		CDCSS (1 step) 000-777 reverse	R CDCSS 000I*	
			R CDCSS 777I*	
4	TX Frequency	2.5K/5.0K/6.25K/1M 100.0000-550.0000MHz	250 0 T 100.00000	Selector Knob: change at step frequency [PF4]: 2.5K/5.0K/6.25K/1M step Step 2.5K: only for RMU800A VHF(<200MHz)
			500 0 T 400.00000	
			625 0 T 400.00000	
			1M T 550.00000	
		Blank	-----	[PF5]: On/Blank
5	TX Signalling	OFF	T Off	[PF5]: Off/CTCSS/CDCSS [PF4]: standard/step mode [PF3]: CDCSS / reverse CDCSS
		CTCSS (EIA standard) 67.0-254.1Hz	T CTCSS 67.0	
			T CTCSS 254.1	
		CTCSS (0.1Hz step) 67.0-254.1Hz	T CTCSS 67.0*	
			T CTCSS 254.1*	
		CDCSS (standard) 023-754	T CDCSS 023N	
			T CDCSS 754N	
		CDCSS (1 step) 000-777	T CDCSS 000N*	
			T CDCSS 777N*	
		CDCSS (standard) 023-754 reverse	T CDCSS 023I	
			T CDCSS 754I	
		CDCSS (1 step) 000-777 reverse	T CDCSS 000I*	
			T CDCSS 777I*	

6	Optional Signalling	Off	Option Off	Default
		DTMF	DTMF	
		2-Tone	2 Tone	
		5-Tone	5 Tone	
		HDC2400™	HDC2400	
		HDC1200	HDC1200	
7	BCL (Busy Channel Lockout)		BCL	Default
		Off	Off	
			BCL	
		CTCSS/CDCSS	CTCSS/CDCSS	
			BCL	
		Opt Signalling	Opt Signal	
			BCL	
		Carrier Only	Carrier Only	
8	Clock Shift	Off	Shift Off	Default
		On	Shift On	
9	TX Power	High	TXPower HI	
		Middle	TXPower MI	
		Low	TXPower LO	Default
10	Wideband / Narrowband	Wide	Wide Band	Default
		Narrow	Narrow Band	
11	Scan ADD/DEL	Delete	Scan Del	
		Add	Scan Add	Default
12	Compander	Off	Compand Off	
		On	Compand On	
13	Scrambler	Off	Scramble Off	Default
		On	Scramble On	
14	PTT ID	Off	PTTID Off	
		PTT ID 1	PTT ID 1	
		PTT ID 2	PTT ID 2	
		PTT ID 3	PTT ID 3	
		PTT ID 4	PTT ID 4	
		5-Tone	5Tone	

15	Channel Name	PHILLPOTTS	Name PHILLPOTTS	12 characters maximum Current input position is indicated by cursor Refer to Appendix 1 "Character Input"
		-----	Name -----	
16	2-Tone Decode	None	2T Decode None	Appears when 2-Tone is selected Default: None
		2-ToneDecode 1-8	2T Decode 1	
			2T Decode 8	
	5-Tone Rx Address	5-Tone Rx Address	5TRx Address 12345	Appears when 5-Tone is selected User-defined
	HDC2400™	None	None	Default: None
		HDC2400™ Call 1-8	List 1 List 8	Appears when HDC2400™ is selected
17	5-Tone Tx Address	5-Tone Tx Address	5TTx Address23456	Appears when 5-Tone is selected User-defined
	HDC2400™ Call 2	None	None	Default: None
		HDC2400™ Call 1-8	List 1 List 8	Appears when HDC2400™ is selected
18	5-Tone Parameter	5-Tone Parameter 1-16	5T Parameter 1	Appears when 5-Tone is selected Default: Parameter 1
			5T Parameter 16	
19	END	END	END	

**Dealer Mode 2: Zone Information**

Select menu "Zone Inform", then press [PF6] to enter Zone Set Mode.

No.	Function	Setting	Display	Remarks
1	Zone Select	100	Zone 100	Selector Knob: select a zone Only existing zone can be set.
2	Zone Name		Name	
			PHILLPOTTS	12 characters maximum
			Name	Current input position is indicated by cursor
			-----	Refer to Appendix 1 'Character Input'
3	Data Transmission (Zone-CH)	Channel 1-512 Step 1	1 CH 1	Selector Knob: change a channel or zone (default ch)
			1 CH 512	
		Zone 1-256 Step 1	1 CH 1	[PF5]: toggle between channel and zone
			256 CH 1	
4	Multi-Scan Scan Add/Del	ADD	MultiLst Add	Add/del to multi-scan list
		DEL	MultiLst Del	Only for multi-scan
5	TOT	Off 15~1200s	TOT Off	
			TOT 15	15s/1Step
			TOT 180	Default
			TOT 1200	
6	TOT PreAlert Time	Off 1-10s	TOT PreAlert Off	Default
			TOT PreAlert 1	1s/1Step
			TOT PreAlert 10	
7	TOT Rekey Time	Off 1-60s	TOT Rekey Off	Default
			TOT ReKey 1	1s/1Step
			TOT ReKey 60	

8	TOT Reset Time	Off 1-15s	TOT Reset Off	Default
			TOT Reset 1	1s/1Step
			TOT Reset 15	
9	Signalling Control	Or	Signal OR	Default
		And	Signal AND	
10	ClearToTranspond	On	CLR Transpond On	Default
		Off	CLR TranspondOff	
11	Zone Home Channel	1-512	Home Channel 1	Default
			Home Channel 512	
12	END	END	END	Display “END” indicating the end of menu option

### Dealer Mode 3: Function Set

Select menu “Function Set”, then press [PF6] to enter Function Set Mode. The menu options are shown as follows:

Sub Menu	Menu Item
3.1	Function 1
3.2	Function 2
3.3	Tone Volume
3.4	Alert Tone
3.5	Aux Inform
3.6	DataPassword

**1. Select submenu “Function 1”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	Squelch Level	0-9	SQL 0	Step: 1
			SQL 5	Default
			SQL 9	
2	Off Hook Decode	Not decode	Off HookNoDecode	Not decode ctcss/cdtcc during off hook status, it works as carrier squelch
		Decode	Off Hook Decode	Decode ctcss/cdtcc during off hook status
3	Off Hook Horn Alert	Off	Off Hook No HA	Horn alert is not available when off hook
		On	Off Hook HA	Horn alert is available when off hook
4	PTT Release Tone	Off	PTT RL Tone Off	
		On	PTT RL Tone On	
5	Busy LED	Off	BusyLED Off	
		On	BusyLED On	
6	UST BackUp	Off	USTBackUpOff	UST RX/TX signalling setting
		On	USTBackUp On	
7	Scrambler BackUp	Off	ScramBak Off	Scrambler setting
		On	ScramBak On	BackUp to current channel
8	Compand BackUp	Off	CompdBak Off	Compand setting backUp to current channel
		On	CompdBak On	
9	Horn Alert BackUp	Off	HABackUp Off	The Horn Alert on status is memorized.
		On	HABackUp On	The Horn Alert on status is cleared when the radio is turned off.
10	BCL Override	Off	BCL Override Off	To transmit in Busy Channel Lockout mode, press [PTT] again within approx. 500ms after [PTT] is released
		On	BCL Override On	



11	Roll Over	Off	RollOver Off	Display rolls over as over 12 characters
		On	RollOver On	
12	END	END	END	Display “END” indicating the end of menu options

**2. Select submenu “Function 2”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	Sub LCD Display	Off	SUB LCD ZoneNum	
		CH Number	SUB LCD Off	
		Zone Number	SUB LCD ChNum	
2	Main LCD Display	CH Number	SUB LCD ChNum	
		CH Name	Main Ch Name	
		Zone Number	Main Zone Number	
		Zone Name	Main Zone Name	
		CH Frequency	Main Frequency	RX frequency is displayed in receive mode and TX frequency in transmit mode
	Icon Display	Tx Power	Icon Tx Power	Display Tx power: H, M, L
		Aux	Icon AuxFunction	Aux function: D(data),G(GPS) A(Aux Out A=High), B(Aux Out B=High)
4	Horn Alert Logic	Until Reset	HA Until Reset	Continuous low (logic level) output until Option Signalling is reset.
		Pulse	HA Pulse	The Horn Alert port is activated 1s, inactivated 500ms, activated 1s in sequence.
		1-30s step 1s	HA 1 second	Continuous low (logic level) output until the selected time has expired.
			HA 30 seconds	

5	Ignition Sense	Off	Ignition Off	
		On	Ignition On	
6	Ignition Sense Power off Timer	00-59Min Step 1Min	IGN 00Hour 00Min	Adjust timer: 0Hour, 0Min-24Hour, 00Min PF5: 1MIN/1HOUR step change
			IGN 00Hour 59Min	
		00-24Hour Step 1Hour	IGN 00Hour 00Min	
			IGN 24Hour 00Min	
7	END	END	END	Display "END" indicating the end of menu option

3. Select submenu "Tone Volume", then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	Power-Up Tone Volume	Off	Tone PowerUp Off	
		User Current	Tone PowerUp User	Use Current volume setting
		1-127	Tone PowerUp 1	Default: 1
2	Control Tone Volume	Off	Tone Control Off	
		User Current	Tone Control User	Use Current volume setting
		1-127	Tone Control 2	Default: 2
3	Alert Tone Volume	Off	Tone AlertOff	
		User Current	Tone Alert User	Use Current volume setting
		1-127	Tone Alert 3	Default: 3
4	Warning Tone Volume	Off	Tone Warning Off	
		User Current	Tone Warning User	Use Current volume setting
		1-127	Tone Warning 4	Default: 4

5	Volume Min	Off	VolumeMinOff	
		1-64 Step 1	VolumeMin 1	
			VolumeMin 64	
6	Volume Max	64-127 Step 1	VolumeMin 64	
			VolumeMin 127	
7	END	END	END	Display "END" indicating the end of menu option

**4. Select submenu "Alert Tone", then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	Alert Tone No.	Alert Tone 1-8	Alert Tone 1	
			Alert Tone 8	
2	Cycle	Continuous	Continuous	
		Cycle 0-255S Step 1	Cycle 0S	
			Cycle 255S	
3	Interval	0-255ms	Interv 1ms	
		Step 1ms	Interv 255ms	
4	Tone Frequency No. 1-14 Step 1	Off	Freq No.1 ----	
		400-2550Hz Step 10Hz	Freq No.1 400Hz	
			Freq No.1 2550Hz	
		Off	Freq No.14 ----	
		400-2550Hz Step 10Hz	Freq No.14 400Hz	
			Freq No.14 2550Hz	

5	Tone Duration No. 1-14 Step 1	0-2550ms Step 10ms	Dura No.1 0ms	
			Dura No.1 2550ms	
		0-2550ms Step 10ms	Dura No.14 0ms	
			Dura No.14 2550ms	
6	END	END	END	Display "END" indicating the end of menu option

5. Select submenu "AUX Inform", then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	UART0	None	UART 0 None	
		Data	UART 0 Data	
2	UART1	None	UART 1 None	
		GPS	UART 1 GPS	
		SmarTrunk	UART 1 SmarTrunk	

No.	Function	Setting	Display	Remarks
3	AUX1	None	AUX 1 None	
		External PTT	AUX 1 External PTT	Input
		Data PTT	AUX 1 Data PTT	Input
		Speaker Mute	AUX 1 Speaker Mute	Input
		External Monitor	AUX 1 ExternalMoni	Input
		Up Key	AUX 1 Up Key	Input
		Down Key	AUX 1 Down Key	Input
		External Hook	AUX 1 ExternalHook	Input
		Emergency	AUX 1 Emergency	Input
		Mic Mute	AUX 1 Mic Mute	Input
		RxCARRIER	AUX 1 RxCARRIER Out	Output, L: Carrier; H : No carrier
		RxTone	AUX 1 RxTone Out	Output, L: CTCSS/CDCSS match
		AUX A	AUX 1 AUXA Out	Output controlled by [AUX A] key
		AUX B	AUX 1 AUXB Out	Output controlled by [AUX B] key

No.	Function	Setting	Display	Remarks
4	AUX2	None	AUX 2 None	
		External PTT	AUX 2 External PTT	Input
		Data PTT	AUX 1 Data PTT	Input
		Speaker Mute	AUX 2 Speaker Mute	Input
		External Monitor	AUX 2 ExternalMoni	Input
		Up Key	AUX 2 Up Key	Input
		Down Key	AUX 2 Down Key	Input
		External Hook	AUX 2 ExternalHook	Input
		Emergency	AUX 2 Emergency	Input
		Mic Mute	AUX 2 Mic Mute	Input
		RxCARRIER	AUX 2 RxCARRIER Out	Output, L: Carrier; H : No carrier
		RxTone	AUX 2 RxTone Out	Output, L: CTCSS/CDCSS match
		AUX A	AUX 2 AUXA Out	Output controlled by [AUX A] key
		AUX B	AUX 2 AUXB Out	Output controlled by [AUX B] key

No.	Function	Setting	Display	Remarks
5	AUX3	None	AUX 3 None	
		External PTT	AUX 3 External PTT	Input
		Data PTT	AUX 1 Data PTT	Input
		Speaker Mute	AUX 3 Speaker Mute	Input
		External Monitor	AUX 3 ExternalMoni	Input
		Up Key	AUX 3 Up Key	Input
		Down Key	AUX 3 Down Key	Input
		External Hook	AUX 3 ExternalHook	Input
		Emergency	AUX 3 Emergency	Input
		Mic Mute	AUX 3 Mic Mute	Input
		RxCarrier	AUX 3 RxCarrierOut	Output, L: Carrier; H : No carrier
		RxTone	AUX 3 RxTone Out	Output, L: CTCSS/CDCSS match
		AUX A	AUX 3 AUXA Out	Output controlled by [AUX A] key
		AUX B	AUX 3 AUXB Out	Output controlled by [AUX B] key

No.	Function	Setting	Display	Remarks
6	AUX4	None	AUX 4 None	
		External PTT	AUX 4 External PTT	Input
		Data PTT	AUX 1 Data PTT	Input
		Speaker Mute	AUX 4 Speaker Mute	Input
		External Monitor	AUX 4 ExternalMoni	Input
		Up Key	AUX 4 Up Key	Input
		Down Key	AUX 4 Down Key	Input
		External Hook	AUX 4 ExternalHook	Input
		Emergency	AUX 4 Emergency	Input
		Mic Mute	AUX 4 Mic Mute	Input
		RxCARRIER	AUX 4 RxCARRIER Out	Output, L: Carrier; H : No carrier
		RxTone	AUX 4 RxTone Out	Output, L: CTCSS/CDCSS match
		AUX A	AUX 4 AUXA Out	Output controlled by [AUX A] key
		AUX B	AUX 4 AUXB Out	Output controlled by [AUX B] key



No.	Function	Setting	Display	Remarks
7	AUX5	None	AUX 5 None	
		External PTT	AUX 5 External PTT	Input
		Data PTT	AUX 5 Data PTT	Input
		Speaker Mute	AUX 5 Speaker Mute	Input
		External Monitor	AUX 5 ExternalMoni	Input
		Up Key	AUX 5 Up Key	Input
		Down Key	AUX 5 Down Key	Input
		External Hook	AUX 5 ExternalHook	Input
		Emergency	AUX 5 Emergency	Input
		Mic Mute	AUX 5 Mic Mute	Input
		RxCARRIER	AUX 5 RxCARRIER Out	Output, L: Carrier; H : No carrier
		RxTone	AUX 5 RxTone Out	Output, L: CTCSS/CDCSS match
		AUX A	AUX 5 AUXA Out	Output controlled by [AUX A] key
		AUX B	AUX 5 AUXB Out	Output controlled by [AUX B] key

No.	Function	Setting	Display	Remarks
8	AUX6	None	AUX 6 None	
		External PTT	AUX 6 External PTT	Input
		Data PTT	AUX 1 Data PTT	Input
		Speaker Mute	AUX 6 Speaker Mute	Input
		External Monitor	AUX 6 ExternalMoni	Input
		Up Key	AUX 6 Up Key	Input
		Down Key	AUX 6 Down Key	Input
		External Hook	AUX 6 ExternalHook	Input
		Emergency	AUX 6 Emergency	Input
		Mic Mute	AUX 6 Mic Mute	Input
		RxCARRIER	AUX 6 RxCARRIER Out	Output, L: Carrier; H : No carrier
		RxTone	AUX 6 RxTone Out	Output, L: CTCSS/CDCSS match
		AUX A	AUX 6 AUXA Out	Output controlled by [AUX A] key
		AUX B	AUX 6 AUXB Out	Output controlled by [AUX B] key

No.	Function	Setting	Display	Remarks
9	AUX7	None	AUX 7 None	
		External PTT	AUX 7 External PTT	Input
		Data PTT	AUX 1 Data PTT	Input
		Speaker Mute	AUX 7 Speaker Mute	Input
		External Monitor	AUX 7 ExternalMoni	Input
		Up Key	AUX 7 Up Key	Input
		Down Key	AUX 7 Down Key	Input
		External Hook	AUX 7 ExternalHook	Input
		Emergency	AUX 7 Emergency	Input
		Mic Mute	AUX 7 Mic Mute	Input
		RxCARRIER	AUX 7 RxCARRIEROutt	Output, L: Carrier; H : No carrier
		RxTone	AUX 7 RxTone Out	Output, L: CTCSS/CDCSS match
		AUX A	AUX 7 AUXA Out	Output controlled by [AUX A] key
		AUX B	AUX 7 AUXB Out	Output controlled by [AUX B] key
10	END	END	END	Display "END" to indicate the end of menu option

**6. Select submenu "DataPassword", then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	Data Password	88888888	88888888	Default data, max. 8 Digital
		12345678	12345678	Refer to Appendix 1 'Character Input'
		Blank	-----	

**Dealer Mode 4: Scan Information**

Select menu “Scan Inform”, then press [PF6] to enter Scan Information Mode. The menu options are shown as follows:

Sub Menu	Menu Item
4.1	Scan Set
4.2	ZoneScanList

**1. Select submenu “Scan Set”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	Scan Type	Single Zone Scan	Scan Single Zone	Scan the added channel of the current zone
		Multi-Zone Scan	Scan Multi Zone	Scan the added channel of zones in multi-scan list
		List Zone Scan	Scan List Zone	Scan the added channel of zones in current zone scan list
2	Scan Restart	Time Operated	Scan Time OP	
		Carrier Operated	Scan Carrier OP	
3	Priority Scan1	Off	PRI 1 Off	Default
		Fixed	PRI 1 Fixed	Dealer mode set
		Selected	PRI 1 Selected	Always Set current CH as priority CH
		Operator Select	PRI 1 Operator Sel	Set current CH as priority CH by key operation (hold [scan], press [MONI] 3 times)
4	Priority Scan 2	Off	PRI 2 Off	Default
		Fixed	PRI 2 Fixed	Dealer mode set
		Selected	PRI 2 Selected	Always Set current CH as priority CH
		Operator Select	PRI 2 Operator Sel	Set current CH as priority CH by key operation (hold [scan], press [MONI] 3 times)

5	Priority Channel1	Off	PRICH1 Off	Ch: Off, 1-512
		Zone	1	Selector Knob: change a channel or zone (default CH)
		Channel	PRICH1 1	[PF5]: channel/zone [PF4]: Priority CH On/Off
6	Priority Channel 2	Off	PRICH2 Off	Ch: Off,1-512
		Zone	1	Selector Knob: change a channel or zone (default CH)
		Channel	PRICH2 1	[PF5]: channel/zone [PF4]: Priority CH On/Off
7	Priority Ch Temporary Add/Del	Both Off	PrioBoth Off	
		Priority 1 On	Priority 1 On	
		Priority 2 On	Priority 2 On	
		Both On	Prio Both On	
8	Priority Ch detect	CTC/DCS Off	Prio CTC/DCS Off	Detect carrier only at priority channel
	CTCSS/CDCSS	CTC/DCS On	Prio CTC/DCS On	Carrier and Signal at priority channel
9	Look Back A	2.0s	Scan LBTimeA 2.0S	The time period that radio returns to a priority channel from a normal channel when no carrier is being received on the priority channel.
		0.5-5s	Scan LBTimeA 0.5S	
		0.1s/1Step	Scan LBTimeA 5.0S	
10	Look Back B	2.0s	Scan LBTimeB 2.0S	The time period that radio returns to a priority channel from a normal channel when signal is present on priority channel but not matching its signalling.
		0.5-5s	Scan LBTimeB 0.5S	
		0.1s/1Step	Scan LBTimeB 5.0S	

11	Revert Channel	Last used (RX)	Scan Revert Call	Default
		Last used (TX)	Scan Revert Used	
		Selected	Scan Revert SEL	
		Selected + TalkBack	Scan SEL TalkBack	
		Priority 1	Scan Revert PRIO1	
		Priority 1 +TalkBack	Scan P1 TalkBack	
		Priority 2	Scan Revert PRIO2	
		Priority 2 +TalkBack	Scan P2 TalkBack	
12	Revert Channel Display	On	Revt Display On	
		Off	Revt Display Off	
13	Dropout Delay Time	3s	Scan DropOutT 3	Default
		1-300s	Scan DropOutT 1	
		1s/1Step	Scan DropOutT 300	
14	Scan Dwell Time	3s	Scan DwellT 3	Default
		1-300s	Scan DwellT 1	
		1s/1Step	Scan DwellT 300	
15	Off Hook Scan	Scan	Off Hook Scan	Scanning is not controlled by hook status
		No Scan	Off Hook No Scan	To scan, microphone must be on hook
16	END	END	END	Display "END" indicating the end of menu option

2. Select submenu “ZoneScan List”, then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	Select a Zone	100	Zone 100	Selector Knob: select zone 1-256 Only existing zone can be set. [PF6]: enter the second item
2	Zone Scan List Enable/Disable		List Enable	Only enabled list for zone list scan,
			List Disable	
3	Add/Del	Add	Zone 1 Add	Selector Knob: change channel 1-512 Only existing zone can be added/ deleted. [PF5]: ADD/DEL (save directly) [PF6]: enter the first item
		Del	Zone 1 Del	
4	END	END	END	Display “END” to indicate the end of menu option

#### Dealer Mode 5: DTMF Set

Select menu “DTMF Set”, then press [PF6] to enter DTMF Set Mode. The menu options are shown as follows:

Sub Menu	Menu Item
5.1	DTMF Encode
5.2	DTMF Decode
5.3	AutoDialList
5.4	PTT ID

1. Select submenu “DTMF Encode”, then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	DTMF Speed (Digital/Sec)	6	DTMF Speed 6	
		8	DTMF Speed 8	
		10	DTMF Speed 10	
		15	DTMF Speed 15	

2	First Digit Time	0ms	1st DT 0ms	First digit = first digit time + digit time
		100ms	1st DT 100ms	Default
		500ms	1st DT 500ms	
		1000ms	1st DT 1000ms	10ms/1Step
3	Digit Time (* and #)	0ms	* # DT 0ms	First: Max (first digit time,*and# time) + digit time Not first: * and # time + digit time
		100ms	* # DT 100ms	Default
		500ms	* # DT 500ms	
		1000ms	* # DT 1000ms	10ms/1Step
4	DTMF Transmit Delay Time	200ms	Tx RDT 200ms	
		100-1000ms	Tx RDT 100ms	Default
			Tx RDT 1000ms	50ms/1Step
5	Dial ID	OFF	DTMF Dial ID Off	Keypad dial BOT&EOT ID
		PTT ID 1	DTMF Dial ID 1	
		PTT ID 2	DTMF Dial ID 2	
		PTT ID 3	DTMF Dial ID 3	
		PTT ID 4	DTMF Dial ID 4	
6	DTMF Hold Time	OFF	DTMF HoldTime Off	
		0.5-2.0S	Hold Time 0.5s	
		Step 0.5s	Hold Time 2.0s	Default
7	Store & Send	OFF	DTMF Sto&Send Off	
		ON	DTMF Sto&Send On	



8	D Key Assignment	D Code	DTMF DKey D-Code	
		Pause1-16s	DTMF DKeyPause 1	
			DTMF DkeyPause 16	
9	DTMF Side Tone	Side Tone Off	DTM F SideTone Off	
		Side Tone On	DTM F SideTone On	
10	Auto Dial	Auto Dial Off	AutoDial Off	
		Auto Dial On	AutoDial On	
11	Auto Dial Programming	AutoDialP Off	AutoDP Off	
		AutoDialP On	AutoDP On	
12	Manual Dial	Manual Dial Off	ManuDial Off	Hold [PTT], then dial
		Manual Dial On	ManuDial On	
13	Keypad Auto Tx	Auto Tx Off	KeyAutoTxOff	Not sent DTMF when only DTMF keys are pressed.
		Auto Tx On	KeyAutoTx On	Sent DTMF by pressing a DTMF Keypad key
14	END	END	END	Display "END" indicating the end of menu option

**Notes:**

- 1) If a transmission starts with the "\*" or "#" tone, the radio compares the tone duration with the set "First Digit Time", and adapts the longer time of the two to the first "\*" or "#" tone.
- 2) DTMF Transmit Delay Time sets the delay time from the starting of transmission to the sending of the first DTMF digit. Making this value longer has a similar effect as setting the First Digit Time longer. When using DTMF and CTCSS/CDCSS it is recommended to set this parameter to 100 ms or more.
- 3) If automatic DTMF encode function (PTT ID, Auto Dial, Store & Send and Dial ID) is used for DTMF Call, DTMF Speed must be set 6, 8 or 10 digits per second.

2. Select submenu "DTMF Decode", then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	Primary Code	12345678	12345678	
		ABCDEF12	ABCDEF12	
2	Secondary Code	12345678	12345678	
		ABCDEF12	ABCDEF12	
3	Auto Reset Time	Off	Auto RstTime Off	
		1-300s	Auto RstTime 1S	
			Auto RstTime 300S	
4	Primary Decode Response	Off	PDR None	
		Ring	PDR Ring	
		Alert	PDR Alert	
		Transpond	PDR Transpond	
		Alert & Tran	PDR Alert & Tran	
5	Primary Decode Alert Tone	Alert 1-8	PDR Alert Tone 1	Ref. Alert Tone in Function Set Mode
			PDR Alert Tone 8	
6	Secondary Decode Response	Off	SDR None	
		Ring	SDR Ring	
		Alert	SDR Alert	
		Transpond	SDR Transpond	
		Alert & Tran	SDR Alert & Tran	
7	Secondary Decode Alert Tone	Alert 1-8	SDR Alert Tone 1	Ref. Alert Tone in Function Set Mode
			SDR Alert Tone 8	
8	END	END	END	Display "END" indicating the end of menu options

**3. Select submenu “AutoDialList”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	Auto Dial No.	1-32 Step 1	AutoDial 1	
			AutoDial 32	
2	Auto Dial Name	ASCII CODE	Name AutoDial N	
			Name -----	No input
3	Auto Dial Code	ABCD1234567890 12	Code ABCD12345678	It will be scrolled as >=12
			Code -----	No input
4	END	END	END	Display “END” indicating the End of menu options

**4. Select submenu “PTT ID”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	PTT ID No.	1-4 Step 1	PTT ID 1	
			PTT ID 4	
2	PTT ID Type	BOT	PTT ID BOT	
		EOT	PTT ID EOT	
		BOTH	PTT ID BOTH	
3	BOT of PTT ID	ABCD12345678	BOT ABCD12345678	It will be scrolled as >=12
			BOT -----	No input
4	EOT of PTT ID	ABCD12345678	EOT ABCD12345678	It will be scrolled as >=12
			EOT -----	No input
5	END	END	END	Display “END” indicating the End of menu options

**Dealer Mode 6: 2-Tone Set**

Select menu “2-Tone Set”, then press [PF6] to enter 2-Tone Set Mode. The menu options are shown as follows:

Sub Menu	Menu Item
6.1	2-Tone Encode
6.2	2-Tone Decode
6.3	2-Tone Option

**1. Select submenu “2-Tone Encode”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	2-Tone Code No.	1-32 Step 1	2-Tone 1	
			2-Tone 32	
2	2-Tone Code Name	ASCII Code	Name 2-Tone 1	
		-----	Name -----	No input
3	Tone A Frequency	288.5-3100Hz	Step A: 288.5Hz	Press [PF4] to switch between 0.1Hz/1Hz/10Hz/100Hz step
			Step A: 3100.0Hz	
4	Tone B Frequency	288.5-3100Hz	Step B: 288.5Hz	Press [PF4] to switch between 0.1Hz/1Hz/10Hz/100Hz step
			Step B: 3100.0Hz	
5	Tone A Duration	0.5-10.0s Step 0.1s	Dur. A: 0.5S	
			Dur. A: 10.0S	
6	Tone B Duration	0.5-10.0s Step 0.1s	Dur. B: 0.5S	
			Dur. B: 10.0S	
7	Gap Duration	0.0-2.0s Step 0.1s	Dur. Gap: 0.0S	
			Dur. Gap: 2.0S	

8	Long A Duration	Off	Dur.	
			Long: Off	
		0.5-10.0s	Dur.	
			Long: 0.5S	
9	END	END	Dur.	
			Long: 10.0S	
9	END	END	END	Display "END" indicating the end of menu options

2. Select submenu "2-Tone Decode", then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	2-Tone Code No.	1-8	2-Tone 1	
		Step 1	2-Tone 8	
2	Decode 1 Format	A-B	Decode1: A-B	
		A-C	Decode1: A-C	
		A-D	Decode1: A-D	
		B-A	Decode1: B-A	
		B-C	Decode1: B-C	
		B-D	Decode1: B-D	
		C-A	Decode1: C-A	
		C-B	Decode1: C-B	
		C-D	Decode1: C-D	
		D-A	Decode1: D-A	
		D-B	Decode1: D-B	
		D-C	Decode1: D-C	
		Long A	Decode1: A	
		Long B	Decode1: B	
		Long C	Decode1: C	

3	Decode 2 Format	None	Decode2: None	
		A-B	Decode2: A-B	
		A-C	Decode2: A-C	
		A-D	Decode2: A-D	
		B-A	Decode2: B-A	
		B-C	Decode2: B-C	
		B-D	Decode2: B-D	
		C-A	Decode2: C-A	
		C-B	Decode2: C-B	
		C-D	Decode2: C-D	
		D-A	Decode2: D-A	
		D-B	Decode2: D-B	
		D-C	Decode2: D-C	
		Long A	Decode2: A	
		Long B	Decode2: B	
		Long C	Decode2: C	
4	Decode 3 Format	None	Decode3: None	
		A-B	Decode3: A-B	
		A-C	Decode3: A-C	
		A-D	Decode3: A-D	
		B-A	Decode3: B-A	
		B-C	Decode3: B-C	
		B-D	Decode3: B-D	
		C-A	Decode3: C-A	
		C-B	Decode3: C-B	
		C-D	Decode3: C-D	
		D-A	Decode3: D-A	
		D-B	Decode3: D-B	
		D-C	Decode3: D-C	
		Long A	Decode3: A	
		Long B	Decode3: B	
		Long C	Decode3: C	

5	Decode 4 Format	None	Decode4: None	
		A-B	Decode4: A-B	
		A-C	Decode4: A-C	
		A-D	Decode4: A-D	
		B-A	Decode4: B-A	
		B-C	Decode4: B-C	
		B-D	Decode4: B-D	
		C-A	Decode4: C-A	
		C-B	Decode4: C-B	
		C-D	Decode4: C-D	
		D-A	Decode4: D-A	
		D-B	Decode4: D-B	
		D-C	Decode4: D-C	
		Long A	Decode4: A	
		Long B	Decode4: B	
		Long C	Decode4: C	
6	Tone A Frequency	288.5-3100Hz	Step A: 288.5Hz	Press [PF4] to switch between 0.1Hz/1Hz/10Hz/100Hz step
			Step A: 3100.0Hz	
7	Tone B Frequency	288.5-3100Hz	Step B: 288.5Hz	Press [PF4] to switch between 0.1Hz/1Hz/10Hz/100Hz step
			Step B: 3100.0Hz	
8	Tone C Frequency	288.5-3100Hz	Step C: 288.5Hz	Press [PF4] to switch between 0.1Hz/1Hz/10Hz/100Hz step
			Step C: 3100.0Hz	
9	Tone D Frequency	288.5-3100Hz	Step D: 288.5Hz	Press [PF4] to switch between 0.1Hz/1Hz/10Hz/100Hz step
			Step D: 3100.0Hz	

10	Call Response 1	None	D1 None	
		Alert	D1 Alert	
		Transpond	D1 Transpond	
		Alert & Tran	D1 Alert & Tran	
11	Call Response 2	None	D2 None	
		Alert	D2 Alert	
		Transpond	D2 Transpond	
		Alert & Tran	D2 Alert & Tran	
12	Call Response 3	None	D3 None	
		Alert	D3 Alert	
		Transpond	D3 Transpond	
		Alert & Tran	D3 Alert & Tran	
13	Call Response 4	None	D4 None	
		Alert	D4 Alert	
		Transpond	D4 Transpond	
		Alert & Tran	D4 Alert & Tran	
14	Decode 1 Alert Tone	Tone A	D1 Tone A	
		Decode Code	D1 Decode Code	
		Alert 1-8	D1 Alert Tone 1	Ref. "Alert Tone" in Function Set Mode
			D1 Alert Tone 8	



15	Decode 2 Alert Tone	Tone A	D2 Tone A	
		Decode Code	D2 Decode Code	
		Alert 1-8	D2 Alert Tone 1	Ref. "Alert Tone" in Function Set Mode
			D2 Alert Tone 8	
16	Decode 3 Alert Tone	Tone A	D3 Tone A	
		Decode Code	D3 Decode Code	
		Alert 1-8	D3 Alert Tone 1	Ref. "Alert Tone" in Function Set Mode
			D3 Alert Tone 8	
17	Decode 4 Alert Tone	Tone A	D4 Tone A	
		Decode Code	D4 Decode Code	
		Alert 1-8	D4 Alert Tone 1	Ref. "Alert Tone" in Function Set Mode
			D4 Alert Tone 8	
18	Tone A Duration	0.5-10.0s Step 0.1s	Dur. A: 0.5S	
			Dur. A: 10.0S	
19	Tone B Duration	0.5-10.0s Step 0.1s	Dur. B: 0.5S	
			Dur. B: 10.0S	
20	Gap Duration	0.0-2.0s Step 0.1s	Dur. Gap: 0.0S	
			Dur. Gap: 2.0S	
21	Long A Duration	Off	Dur. Long: Off	
			Dur. Long: 0.5S	
		0.5-10.0s	Dur. Long: 10.0S	

22	END	END	++END	Display “END” indicating the end of menu options
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**3. Select submenu “2-Tone Option”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	2-Tone Tx Rise Time	200ms	Rise Time 200ms	Default
		100-1000ms	Rise Time 100ms	
			Rise Time 1000ms	50ms/1Step
2	2-Tone Tx Tone	Off	Tone Off	
		SideTone	SideTone	
		Short Beep	Short Beep	
3	Auto Rese Time	Off	RstTime OFF	
		1-300s	Auto	
			RstTime 1S	
4	END	END	END	Display “END” indicating the end of menu options

#### Dealer Mode 7: 5-Tone Set

Select menu “5-Tone Set”, then press [PF6] to enter 5-Tone Set Mode. The menu options are shown as follows:

Sub Menu	Menu Item
7.1	Parameter
7.2	Encode Teleg
7.3	Encode Frame
7.4	EncodeOption
7.5	Decode Teleg
7.6	DecodeOption

1. Select submenu “Parameter”, then press [PF6] to enter. Select Parameter 1-16 to set 5-Tone parameters.

No.	Function	Setting	Display	Remarks
1	5-Tone Parameter	Parameter1-16 Step 1	Parameter 1	Default: Parameter 1
			Parameter 16	
2	SingleTone	SigleTone 0-F	SingleTone 0	Default: SingleTone F
			SingleTone F	
3	Connect ID	Off	CNCT Off	Default: Off
		TxCode 1-32	CNCT ID TxCode 1	
			CNCT ID TxCode 32	
4	Disconnect ID	Off	DCNT Off	Default: Off
		TxCode 1-32	DCNT ID TxCode 1	
			DCNT ID TxCode 32	
5	TX/RX Address Standard	ZVEL1	TxRx ZVEL1	Default
		ZVEL2	TxRx ZVEL2	
		ZVEL3	TxRx ZVEL3	
		PZVEI	TxRx PZVEI	
		DZVEI	TxRx DZVEI	
		PDZVEI	TxRx PDZVEI	
		CCIR1	TxRx CCIR1	
		CCIR2	TxRx CCIR2	
		PCCIR	TxRx PCCIR	

5	TX/RX Address Standard	EEA	TxRx EEA	
		Eurosignal	TxRx Eurosignal	
		Natel	TxRx NATEL	
		EIA	TxRx EIA	
		MODAT	TxRx MODAT	
		CCITT	TxRx CCITT	
		USER DEFINED	TxRx USER DEFINED	
6	Decode Code 1	None	DC1 None	
		Decode Telegram 1-10	DC1 Telegram 1	
			DC1 Telegram 10	
7	Decode Code 2	None	DC2 None	
		Decode Telegram 1-10	DC2 Telegram 1 DC2 Telegram 10	
8	Decode Code 3	None	DC3 None	
		Decode Telegram 1-10	DC3 Telegram 1 DC3 Telegram 10	
9	Decode Code 4	None	DC4 None	
		Decode Telegram 1-10	DC4 Telegram 1 DC4 Telegram 10	
10	END	END	END	Display "END" indicating the end of menu options

4. Select submenu “Encode Teleg”, then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	5-Tone EncodeTelegram	Encode Telegram 1-32 Step 1	EncodeTel 1	Default: EncodeTelegram 1
			EncodeTel 32	
2	First Frame	Disable	1stF Disable	Default: Disable
		RxAdress	1stF RxAdress	
		TxAdress	1stF TxAdress	
		Frame 1-32	1st Frame 1	
			1st Frame 32	
3	Second Frame	Disable	2ndF Disable	Default: Disable
		RxAdress	2ndF RxAdress	
		TxAdress	2ndF TxAdress	
		Frame 1-32	2nd Frame 1	
			2nd Frame 32	
4	Third Frame	Disable	3rdF Disable	Default: Disable
		RxAdress	3rd F RxAdress	
		TxAdress	3rd F TxAdress	
		Frame 1-32	3rd t Frame 1	
			3rd Frame 32	

5	Transpond Decode	Disable	Disable	Default: Disable
		DecodeTel 1-10	Decode Tel 1	
			Decode Tel 10	
6	TelegramName		Name 12345	Refer to Appendix 1 “Character Input”
			Name -----	
7	END	END	END	Display “END” indicating the end of menu options

3. Select submenu “EncodeFrame”, then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	Frame	Frame 1-32	Frame 1	Default: Frame 1
			Frame 32	
2	5-Tone Standard	ZVEL1	ZVEL1	Default: ZVEL1
		ZVEL2	ZVEL2	
		ZVEL3	ZVEL3	
		PZVEI	PZVEI	
		DZVEI	DZVEI	
		PDZVEI	PDZVEI	
		CCIR1	CCIR1	
		CCIR2	CCIR2	
		PCCIR	PCCIR	
		EEA	EEA	
		Eurosignal	Eurosignal	
		Natel	NATEL	
		EIA	EIA	
		MODAT	MODAT	
		CCITT	CCITT	
		USER DEFINED	USER DEFINED	
3	Frame Code	12345	Fcode 12345	Default:FFFFF
4	END	END	END	Display “END” indicating the end of menu options

**4. Select submenu “EncodeOption”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	5-Tone Delay 1	0-7000ms Step 10ms	1st Delay 0ms	Default: 100ms
			1st Delay 7000ms	
2	5-Tone Delay 2	0-7000ms Step 10ms	2nd Delay 0ms	Default: 300ms
			2nd Delay 7000ms	
3	5-Tone Delay 3	0-7000ms Step 10ms	3rd Delay 0ms	Default: 300ms
			3rd Delay 7000ms	
4	5-Tone End Delay	0-7000ms Step 10ms	End Delay 0ms	Default: 100ms
			End Delay 7000ms	
5	5-Tone Transpond Delay	0-7000ms Step 10ms	Tspd Delay 0ms	Default: 1000ms
			Tspd Delay 7000ms	
6	5-Tone First Tone Length	0-7000ms Step 10ms	1st ToneL 0ms	Default: 1000ms
			1st ToneL 7000ms	
7	5-Tone Delay 2Tone	Off	D2ToneOff	Default: Off
		0-9,A-F	Delay2Tone 0	
		Step 1	Delay2Tone F	
8	5-Tone Delay 3Tone	Off	D3ToneOff	Default: Off
		0-9,A-F	Delay3Tone 0	
		Step 1	Delay3Tone F	
9	5-Tone Side Tone	Side Tone On	Side Tone On	Default: Off
		Side Tone Off	Side Tone Off	
10	5-Tone Monitor	Monitor On	Monitor On	Default: On
		Monitor Off	Monitor Off	

11	END	END	END	Display "END" indicating the end of menu options
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**5. Select submenu "Decode Telegr", then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	5Tone Decode Telegram	Decode Telegram 1-10	DecodeTel 1 Decode Tel 10	
2	5Tone Standard	ZVEL1 ZVEL2 ZVEL3 PZVEI DZVEI PDZVEI CCIR1 CCIR2 PCCIR EEA Eurosignal Natel EIA MODAT CCITT USER DEFINED	ZVEL1 ZVEL2 ZVEL3 PZVEI DZVEI PDZVEI CCIR1 CCIR2 PCCIR EEA Eurosignal NATEL EIA MODAT CCITT USER DEFINED	Default: ZVEL1
3	Frame 1	None  Normal  Rx Address  Single	F1 None  Nor FFFFFFFF  F1 Rx Address  F1 Single Tone	Default: None
4	Frame 2	None  Normal  Rx Address  Single	F2 None  Nor FFFFFFFF  F2 Rx Address  F2 Single Tone	Default: None



5	Frame 3	None	F3 None	Default: None
		Normal	Nor FFFFFFFF	
		Rx Address	F3 Rx Address	
		Single	F3 Single Tone	
6	Monitor	Disable	Moni Disable	Default: Open
		Close	Moni Close	
		Open	Moni Open	
7	Stun	Disable	Stun Disable	Default: Disable
		Stun	Stun Enable	
		Revive	Stun Revive	
		Kill	Stun Kill	
8	Scan	Disable	Scan Disable	Default: Disable
		Start	Scan Start	
		Stop	Scan Stop	
9	Transpond	None	None	Default: None
		Encode	EncodeTel 1	
		Telegram1-32	EncodeTel 32	
10	Individual Alert Tone		IndAlert Off	
			IndivdAlert1	
		Alert 1-8	IndivdAlert8	
11	Group Alert Tone	Off	GrpAlert Off	
			GroupAlert 1	
		Alert 1-8	GroupAlert 8	
12	END	END	END	Display "END" indicating the end of menu options

6. Select submenu “Decode Option”, then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	5 Tone Auto Reset Time	Off	Auto Reset Time Off	Default: Off
		1-180s Step 1s	Auto ResetTime1	
			Auto ResetTime180	
2	Next Decode Delay Time	0-2550ms Step 10ms	NDDT 0ms	Default: 1600ms
			NDDT 2550ms	
3	Alert	Alert On Alert Off	Alert On Alert Off	Default: On
4	LED	Enable	LED Enable LED Disable	Default: Enable
5	END	END	END	Display “END” indicating the end of menu options

#### Dealer Mode 8: Embedded Message

Select menu “Embedded Msg”, and then press [PF6] to enter if no password is set or a correct password is entered. The menu options are shown as follows:

Sub Menu	Menu Item
8.1	EmbeddedMsg1
8.2	EmbeddedMsg2
8.3	EmbeddedMsg3
8.4	EmbeddedMsg4
8.5	Msg Password

Press [PF6] to enter any of the above menu options, the selected embedded message or message password would be displayed. Then press [PF1] to edit the embedded message or message password. Please refer to Appendix 1 “Character Input”.

**Dealer Mode 9: Emergency Set**

Select menu "Emergency Set", then press [PF6] to enter.

No.	Function	Setting	Display	Remarks
1	Emergency Zone Emergency CH	Zone: 1-256 CH: 1-512	1 CH 100	Selector Knob: change a channel or zone (default ch) [PF5]: channel/zone
2	Emergency Cycle	Continuous	Cycle Contin	
		1-200	Cycle 1	
		Step 1	Cycle 200	
3	Emergency Key Delay Time	Off	Key Deley Off	
		0.1-5.0s	Key Deley 0.1S	
		Step 0.1s	Key Deley 5.0S	
4	Tx Duration	20s	Tx Dur. 20S	Default data
		1-60s	Tx Dur. 1S	
		Step 1s	Tx Dur. 60S	
5	Rx Duration	20s	Tx Dur. 20S	Default data
		1-180s	Tx Dur. 1S	
		Step 1s	Tx Dur. 180S	
6	Emergency Type	Off	Type Off	
		DTMF	Type DTMF	
		MSK	Type MSK	
7	Emergency ID	-----	ID -----	No input
		0000000000000000 9999999999999999	ID 0000000000000000	
			ID 9999999999999999	
8	Emergency Led	Off	LED Off	
		On	LED On	

9	Emergency Display Text	-----	Tex t -----	No Text to be Displayed
		Emergency	Tex t Emergency	Max 12
10	Emergency Mode	Silent	Mod e Silent	
		Audible	Mod e Audible	
11	Tone 1 Duration	0-255s	Ton e 1 Dur. 0S	
		Step 1s	Ton e 1 Dur. 255S	
12	Tone 2 Duration	0-255s	Ton e 2 Dur. 0S	
		Step 1s	Ton e 2 Dur. 255S	
13	END	END	END	Display “END” indicating the end of menu options

**Dealer Mode 10: STUN Inform**

Select menu “Stun Inform”. Press [PF6], the radio enters Stun Information Mode if no password is set or a correct password is entered.

Sub Menu	Menu Item
10.1	Stun Set
10.2	Stun Password

**1. Select submenu ‘Stun Set’, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	Stun Encode	-----	Stun Disable	No encode, disable Stun
		0000000	Stun 0000000	
		~FFFFFFF	Stun FFFFFFF	
2	Stun Response	TX Inhibit	Stun TX Inhibit	Default
		TX/RX Inhibit	Stun TXRX Inhibit	
		Kill	Stun Kill	
3	END	END	END	Display “END” to indicate the end of menu options

**2. Select submenu “Stun Password”, then press [PF6] to view the password. Then press [PF1] to edit the password. Please refer to Appendix 1 “Character Input”.**

The password is numeric digit only, 8 digits maximum.

**Dealer Mode 11: Mode Information**

Select menu “Mode Inform”, then press [PF6], the radio enters Mode Information Mode if no password is set or a correct password is entered. The menu options are shown as follows:

Sub Menu	Menu Item
11.1	Mode Select
11.2	Mode Password

**1. Select submenu “Mode Select”, then press [PF6] to enter.**

No.	Function	Setting	Display	Remarks
1	User Set Mode	OFF	Mode UserSet Off	
		ON	Mode UserSet On	Default
2	Channel Set Mode	OFF	Mode CHSet Off	
		ON	Mode CHSet On	Default

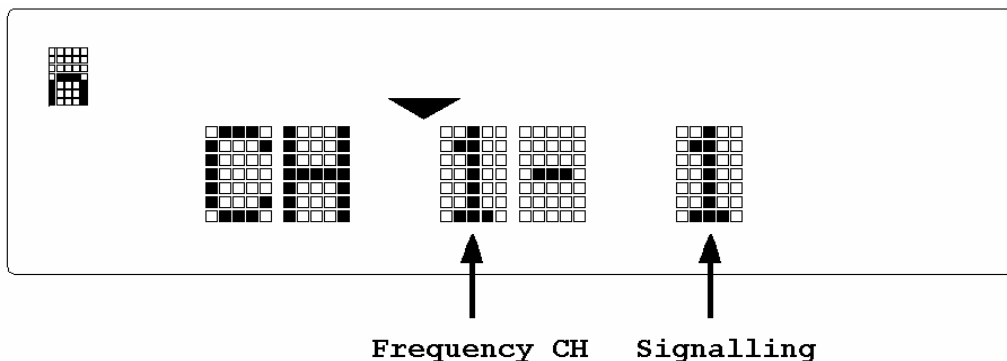
3	Zone Information Mode	OFF	Mode ZoneSet Off	
		ON	Mode ZoneSet On	Default
4	Function Set Mode	OFF	Mode FuncSet Off	
		ON	Mode FuncSet On	Default
5	Scan Information Mode	OFF	Mode ScanSet Off	
		ON	Mode ScanSet On	Default
6	DTMF Set Mode	OFF	Mode DTMFSet Off	
		ON	Mode DTMFSet On	Default
7	2-Tone Set Mode	OFF	Mode 2ToneSet Off	
		ON	Mode 2ToneSet On	Default
8	5-Tone Set Mode	OFF	Mode 5ToneSet Off	
		ON	Mode 5ToneSet On	Default
9	Embedded Message Mode	OFF	Mode EmbedMsg Off	
		ON	Mode EmbedMsg On	Default
10	Emergency Set Mode	OFF	Mode Emergency Off	
		ON	Mode Emergency On	Default
11	Stun Set Mode	OFF	Mode Stun Set Off	
		ON	Mode Stun Set On	Default
12	Test Mode	OFF	Mode LocalTestOff	
		ON	Mode LocalTest On	Default

13	Clone Mode	OFF	Mode WireCloneOff	
		ON	Mode WireClone On	Default
14	Model Set Mode	OFF	Mode ModelSel Off	
		ON	Mode ModelSel On	Default
15	Firmware Download Mode	OFF	Prog FirmWare Off	
		ON	Prog FirmWare On	Default
16	Firmware Version Display	OFF	Ver Version Off	
		ON	Ver Version On	Default
17	END	END	END	Display "END" indicating the end of menu options

2. Select submenu "DBD Password", then press [PF6] to view the password. Then press [PF1] to edit the password. Please refer to Appendix 1 "Character Input".  
The password is numeric digit only, 8 digits maximum.

## Test Mode

1. Turn power on while holding down [PF2], the radio enters Test Mode. Frequency test channel and signalling test channel are displayed.



In this mode, the channel frequency (center, low, high) can be modified through the programming software.


Model	RX/TX	CH1 ( C )	CH 2 ( L )	CH 3 ( H )	CH 4	CH 5	CH 6	CH 7	CH 8
0 (V)	RX(MHz)	155.15	136.15	173.85	145.55	164.55	155.00	155.20	155.40
	TX(MHz)	155.00	136.00	174.00	145.50	164.50	155.00	155.20	155.40
1 (U2)	RX(MHz)	481.15	450.15	511.85	465.55	496.55	481.00	481.20	481.40
	TX(MHz)	481.00	450.00	512.00	465.50	496.50	481.00	481.20	481.40
2 (U5)	RX(MHz)	375.15	350.15	399.85	362.55	387.55	375.00	375.20	375.40
	TX(MHz)	375.00	350.00	400.00	362.50	387.50	375.00	375.20	375.40
3 (U1)	RX(MHz)	435.15	400.15	469.85	417.55	452.55	435.00	435.20	435.40
	TX(MHz)	435.00	400.00	470.00	417.50	452.50	435.00	435.20	435.40
4 (U4)	RX(MHz)	465.15	440.15	489.85	452.55	477.55	465.00	465.20	465.40
	TX(MHz)	465.00	440.00	490.00	452.50	477.50	465.00	465.20	465.40
5 (U3)	RX(MHz)	503.15	480.15	525.85	491.75	515.25	503.00	503.20	503.40
	TX(MHz)	503.00	480.00	526.00	491.70	515.20	503.00	503.20	503.40
6 (U6)	RX(MHz)	425.15	400.15	449.85	412.55	437.55	425.00	425.20	425.40
	TX(MHz)	425.00	400.00	450.00	412.50	437.50	425.00	425.20	425.40

Signallings are shown as follows:


No.	RX	TX	Description
1	None	None	
2	None	100Hz square wave	
3	CTCSS 67.0Hz	CTCSS 67.1Hz	
4	CTCSS 151.4Hz	CTCSS 151.4Hz	
5	CTCSS 210.7Hz	CTCSS 210.7Hz	
6	CTCSS 250.3Hz	CTCSS 250.3Hz	
7	CDCSS 023N	CDCSS 023N	
8	CDCSS 754I	CDCSS 754I	
9	DTMF (159D)	DTMF (159D)	
10	None	DTMF 9	
11	2-tone 321.7/928.1	None	Tone duration: 1s/1s
12	Single tone 1200Hz	Single tone 1200Hz	Tone duration: 4s
13	None	Single tone 1000Hz	
14	MSK	MSK	



**2. In Test Mode, the following functions can be accomplished by key pressing.**

Key	Function	Description
Up	Volume Up	
Down	Volume down	
PF1	Wide band/Narrow band	
PF2	Squelch Open/Close	“  ” icon appears when squelch is opened.
PF3	Test Mode/ Adjustment Mode	
PF4	Activate compander function	PF1: compander on/off PF2: clock shift on/off PF3: 1200/2400bps MSK
PF5	Signalling Up	
PF6	Signalling Down	
Selector Knob	Channel Up/Down	

In Test Mode, press [PF4], then press the following key to enable the corresponding functions.

PF1	Compander On/Off	“▼” icon appears when compander is turned On
PF2	Clock shift On/Off	“A” icon appears when clock shift is turned On
PF3	1200/2400bps MSK	“  ” icon appears when 2400bps is selected
PF4	Return to Test Mode	
PF5	None	
PF6	None	


**3. In Test Mode, press [PF3] to enter Adjustment Mode. Turn the Selector Knob to choose your desired setting items.**

No.	Dealer Mode	LCD Display
1	Frequency stability	Frequency
2	TX power	Tx Power
3	Max. deviation	Max.Deviate
4	CDCSS balance	CDCSSBalance
5	CTCSS deviation	CTCSSDeviate
6	CDCSS deviation	CDCSSDeviate
7	DTMF deviation	CDCSSDeviate
8	MSK deviation	MSK Deviate
9	Single tone deviation	Tone Deviate
10	RX sensitivity	Rx Sensitivi
12	SQL close	Close SQL

In Test Mode, user can press the following key to switch models.

- ① Press [PF3] to toggle between Test Mode and Adjustment Mode.  
Press [PF4] to toggle between Adjustment Mode and Model Set Mode ([PF4] is invalid if Model Set Mode is inhibited by your dealer. Refer to “Model Set Mode” for details).
- ② Press [PF6] to enter the selected mode.

**4. In Adjustment Mode, the following functions can be accomplished by key pressing.**

Key	Function	Description
Up	Volume Up	
Down	Volume down	
PF1	Return to Adjustment Item menu	
PF2	Squelch Open/Close	 icon appears when squelch is opened.
PF4	Enter the previous item (Down)	
PF5	Enter the next item (Up)	
PF6	Save the settings, enter the next item	
Selector Knob	Adjust upwards/downwards	

**5. Setting Items ( \* \* \* : 1-256 )**

Setting Item	Wideband/ Narrowband	Frequency	Main LCD	Sub LCD	Description
CDCSS Balance	Wide	Center	CDCSS BAL ***	__C	100Hz square wave
		Low	CDCSS BAL ***	__L	100Hz square wave
		High	CDCSS BAL ***	__H	100Hz square wave
	Narrow	Center	CDCSS BAL ***	N_C	100Hz square wave
CTCSS Deviation	Wide	Center	67.0 DEV ***	__C	CTCSS: 67.0Hz
		Low	67.0 DEV ***	__L	CTCSS: 67.0Hz
		High	67.0 DEV ***	__H	CTCSS: 67.0Hz
	Narrow	Center	67.0 DEV ***	N_C	CTCSS: 67.0Hz
	Wide	Center	151.4 DEV ***	__C	CTCSS: 151.4Hz
		Low	151.4 DEV ***	__L	CTCSS: 151.4Hz
		High	151.4 DEV ***	__H	CTCSS: 151.4Hz
	Narrow	Center	151.4 DEV ***	n_C	CTCSS: 151.4Hz
	Wide	Center	254.1 DEV ***	__C	CTCSS: 254.1Hz
		Low	254.1 DEV ***	__L	CTCSS: 254.1Hz
		High	254.1 DEV ***	__H	CTCSS: 254.1Hz
	Narrow	Center	254.1 DEV ***	n_C	CTCSS: 254.1Hz
CDCSS Deviation	Wide	Center	CDCSS DEV ***	__C	CDCSS: 023N
		Low	CDCSS DEV ***	__L	CDCSS: 023N
		High	CDCSS DEV ***	__H	CDCSS: 023N
	Narrow	Center	CDCSS DEV ***	n_C	CDCSS: 023N
DTMF Deviation	Wide	Center	DTMF DEV ***		DTMF: 9
	Narrow	Center	DTMF DEV ***	n__	DTMF: 9
MSK Deviation	Wide	Center	MSK DEV ***		0XAAA...
	Narrow	Center	MSK DEV ***	n__	0XAAA...
Single Tone Deviation	Wide	Center	Tone DEV ***		1KHz
	Narrow	Center	Tone DEV ***	n__	1KHz
RX Sensitivity	-	Low	Sensiti ***	__L	No signalling, SQ off
	-	Center/Low	Sensiti ***	_CL	No signalling, SQ off
	-	Center	Sensiti ***	__C	No signalling, SQ off
	-	High/Center	Sensiti ***	_HC	No signalling, SQ off
	-	High	Sensiti ***	__H	No signalling, SQ off

SQL Open	SQL 9 Wideband	Center	OpenSQL9 ***	__C	No signalling
		Low	OpenSQL9 ***	__L	No signalling
		High	OpenSQL9 ***	__H	No signalling
	SQL 9 Narrowband	Center	OpenSQL9 ***	n_C	No signalling
	SQL3 Wideband	Center	OpenSQL3 ***	__C	No signalling
		Low	OpenSQL3 ***	__L	No signalling
		High	OpenSQL3 ***	__H	No signalling
	SQL3 Narrowband	Center	OpenSQL3 ***	n_C	No signalling
SQL Close	SQL 9 Wideband	Center	CloseSQL9 ***	__C	No signalling
		Low	CloseSQL9 ***	__L	No signalling
		High	CloseSQL9 ***	__H	No signalling
	SQL 9 Narrowband	Center	CloseSQL9 ***	n_C	No signalling
	SQL3 Wideband	Center	CloseSQL3 ***	__C	No signalling
		Low	CloseSQL3 ***	__L	No signalling
		High	CloseSQL3 ***	__H	No signalling
	SQL3 Narrowband	Center	CloseSQL3 ***	n_C	No signalling

## Model Set Mode

1. Turn power on while holding down [PF2], the radio enters Test Mode. The frequency test channel and signalling test channel are displayed.
2. In Test Mode, press [PF3] to enter Adjustment Mode.
3. In Adjustment Mode, press [PF4] to enter Model Set Mode. "DESTINATION" and the model No. are displayed.
4. Turn the Selector Knob to choose model 1-6.
5. Press [PF6] to confirm.
6. Press [PF3] to return to Test Mode.

### Notes:

1. Once the new model is set, previous channel settings (frequency, CTCSS/CDCSS, channel function settings) will be deleted, and part of functions are also changed. Therefore, do not make this operation unless it's very necessary, such as changing the EEPROM or FLASHROM, etc.
2. Initial Data Table

Model	RX/TX	CH 1 (Center )	CH 2 (Low)	CH 3 (High )	CH 4	CH 5	CH 6	CH 7	CH 8
0 (V)	RX(MHz)	155.15	136.15	173.85	145.55	164.55	155.00	155.20	155.40
	TX(MHz)	155.00	136.00	174.00	145.50	164.50	155.00	155.20	155.40
1 (U2)	RX(MHz)	481.15	450.15	511.85	465.55	496.55	481.00	481.20	481.40
	TX(MHz)	481.00	450.00	512.00	465.50	496.50	481.00	481.20	481.40
2 (U5)	RX(MHz)	375.15	350.15	399.85	362.55	387.55	375.00	375.20	375.40
	TX(MHz)	375.00	350.00	400.00	362.50	387.50	375.00	375.20	375.40
3 (U1)	RX(MHz)	435.15	400.15	469.85	417.55	452.55	435.00	435.20	435.40
	TX(MHz)	435.00	400.00	470.00	417.50	452.50	435.00	435.20	435.40
4 (U4)	RX(MHz)	465.15	440.15	489.85	452.55	477.55	465.00	465.20	465.40
	TX(MHz)	465.00	440.00	490.00	452.50	477.50	465.00	465.20	465.40
5 (U3)	RX(MHz)	503.15	480.15	525.85	491.75	515.25	503.00	503.20	503.40
	TX(MHz)	503.00	480.00	526.00	491.70	515.20	503.00	503.20	503.40
6 (U6)	RX(MHz)	425.15	400.15	449.85	412.55	437.55	425.00	425.20	425.40
	TX(MHz)	425.00	400.00	450.00	412.50	437.50	425.00	425.20	425.40

# Circuit Description

## 1. Frequency Configuration

The receiver utilizes double conversion superheterodyne. The first IF is 73.05MHz and the second is 450KHz. The first local oscillator signal is supplied by PLL circuit. The second local oscillator signal (73.5MHz) is generated from TCXO (73.5MHz); The PLL circuit also generates the frequencies needed in the transmitter (See Fig.1).

Frequency Range: 450 MHz—512MHz

## 2. Receiver Circuit

The receiver section configuration is shown as Fig. 1.

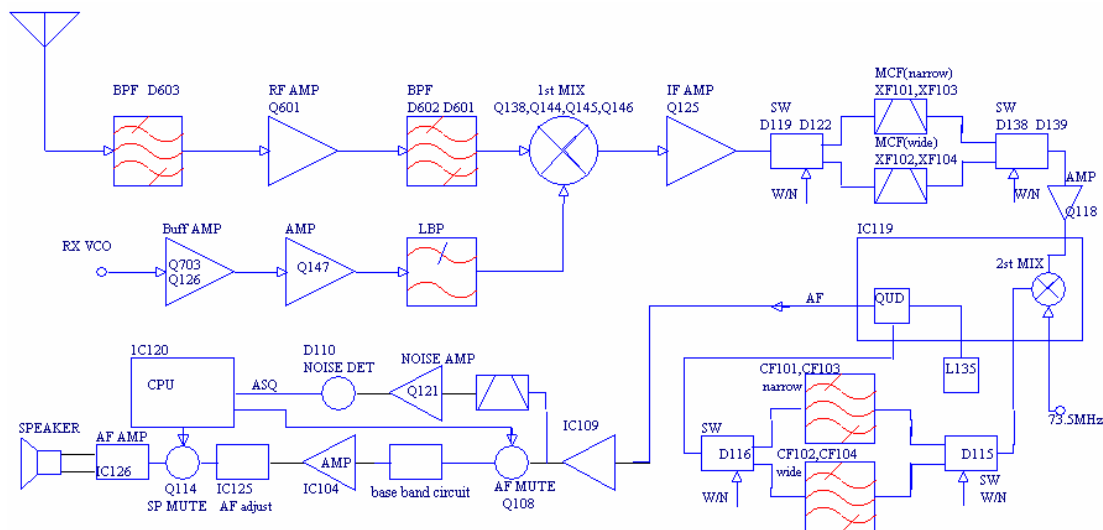


Figure 1 Receiver Section Configuration

### 2.1 RF AMP BPF

It consists of BPF (D603, D602, D601) and RF amplifier (Q601). The range of bandpass frequency (U1: 400 MHz—470MHz; U2: 450 MHz—512MHz U3: 480 MHz—526MHz; U4: 440 MHz—490MHz; U5: 350 MHz—400MHz). The signal is filtered by the RF Amp BPF to eliminate unwanted signals before going to the first mixer.

### 2.2 The First Mixer

The signal from RF AMP BPF is mixed with the first local oscillator signal from PLL circuit in the double-balance mixer (Q138, Q144, Q145, Q146) to generate a 73.05MHz first IF signal. The first IF signal is then fed through two crystal filters (N: XF101, XF103; W: XF102, XF104) to further remove spurious signals.

## 2.3 IF Amplifier

The first IF signal is amplified by Q125, Q118 and then enters IC119 (TA31136FN). The signal is mixed with the second local oscillator signal (73.05MHz) to create a 450KHz second IF signal. The second IF signal is then fed to a ceramic filter (N: CF101, CF103; W: CF102, CF104) to eliminate unwanted signals. The resulting signal is detected by IC119 and output from Pin9 as an AF signal.

## 2.4 AF Amplifier

The AF signal from IC119 is amplified by IC109 before being filtered. The resulting AF signal passes through Q108 (AF MUTE) and IC121(electronic switch), then is amplified by IC106 (the received signalling is inputted into CPU for decoding) and IC104. The amplified signal is fed to IC125 (volume control) and Q114 (SP MUTE) before entering AF AMP (IC126). The outputted AF signal is then delivered to the speaker through control panel.

## 2.5 Squelch

The AF signal from IC119 is amplified by IC109 again, and then filtered to remove noise signals. The noise signal is amplified by Q121 and rectified by D110 to produce an ASQ level. The ASQ level is then compared in CPU (IC120) to generate a level which controls AF MUTE and SP MUTE. IC120 determines whether to output sounds from the speaker by controlling Q108, Q114.

# 3. Transmitter Circuit

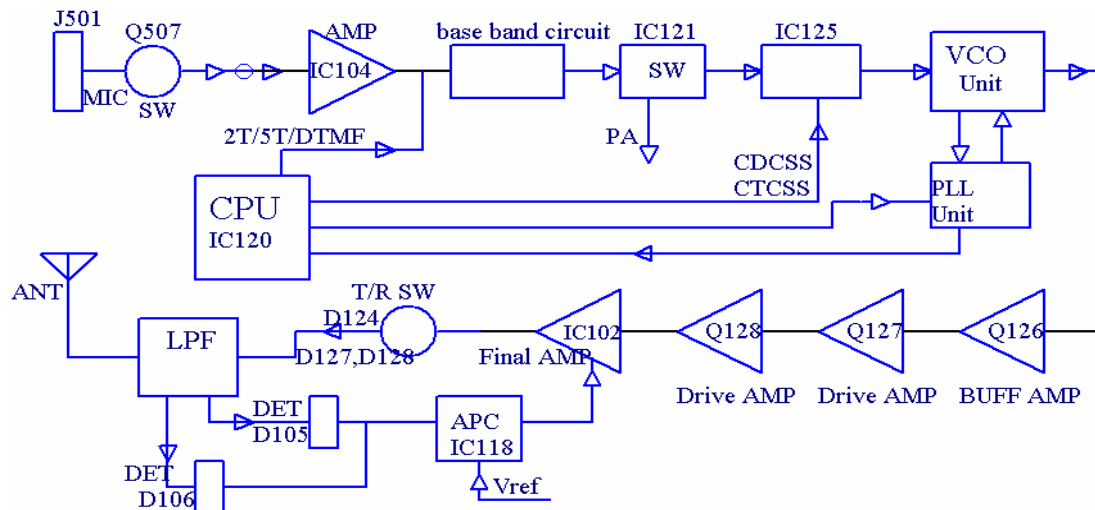


Figure 2 Transmitter Section Configuration

## 3.1 MIC Circuit and Modulation Circuit

The AF signal from MIC is amplified by IC104 after passing through the MIC control switch (Q507). The resulting signal is then amplified by IC106 and pre-emphasized, encoded. It is passed to IC121 (electronic switch) before reaching IC125. The signalling is inputted into IC125 and enters VCO for modulation.

### 3.2 Driver and Final Power Amplifier Circuit

TX-RF signal is outputted from Q703 in VCO circuit and amplified by Q126, Q127 and Q128. The amplified signal is then fed to IC102 (Power Module) and passes through LPF before reaching the antenna terminal.

### 3.3 APC

The APC is used to keep the power output at a constant preset value. D105 and D106 transform the signal from detector into DC voltage which is then compared with the reference voltage from CPU in IC118 and outputted as DC control voltage. The DC control voltage controls the output power by controlling the grid of IC102.

## 4. PLL Circuit

PLL circuit generates the first local oscillator signal for reception and the RF signal for transmission. PLL circuit consists of TX frequency oscillator (Q701), RX frequency oscillator (Q702), buffer amplifier (Q703), RF amplifier (Q124), PLL IC (IC801), LPF (Q804, Q805) and TX/RX VCO control switch (Q704, Q706).

In transmit mode, IC120 transmits the frequency data to PLL IC. Q704 is turned on to activate TX VCO. The outputted signal is amplified by Q703, Q124, and then divided by PLL IC into 2.5KHz, 5KHz or 6.25KHz signal. The divided signal is compared with 2.5KHz, 5KHz or 6.25KHz reference signal from 16.8MHz crystal oscillator (2.5 PPM frequency stability) in the phase comparator. The frequency control voltage outputted from the phase comparator is sent to TX VCO after passing through LPF (Q804, Q805). In the meantime, modulation signal (TX) is passed to TX VCO for frequency modulation.

The working principle in receive mode is similar to that in transmit mode.

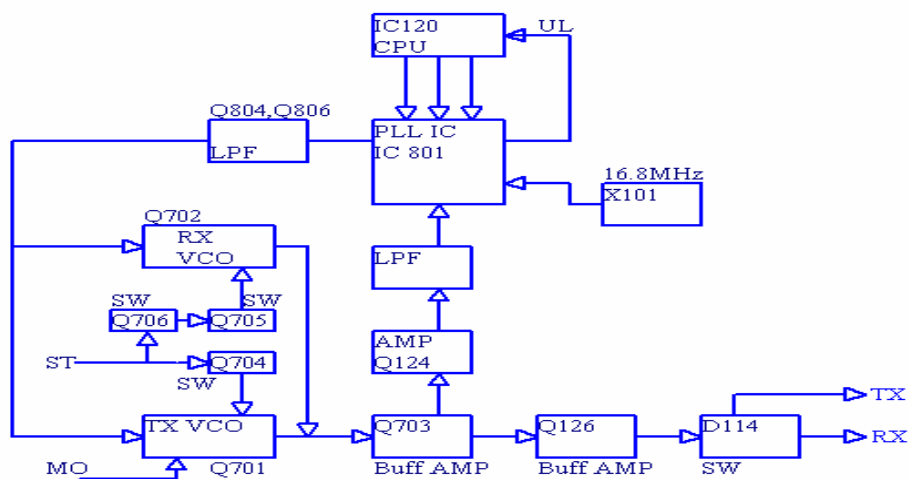


Figure 3 PLL Circuit



## 5. Control Circuit

Circuit in this section is comprised of CPU, reset IC, power supply controller and flash ROM.

### 5.1 CPU

IC120 (CPU) operates at 9.8304MHz. It controls the data transmission between receive circuit, transmit circuit, control circuit, display circuit and peripheral circuit.

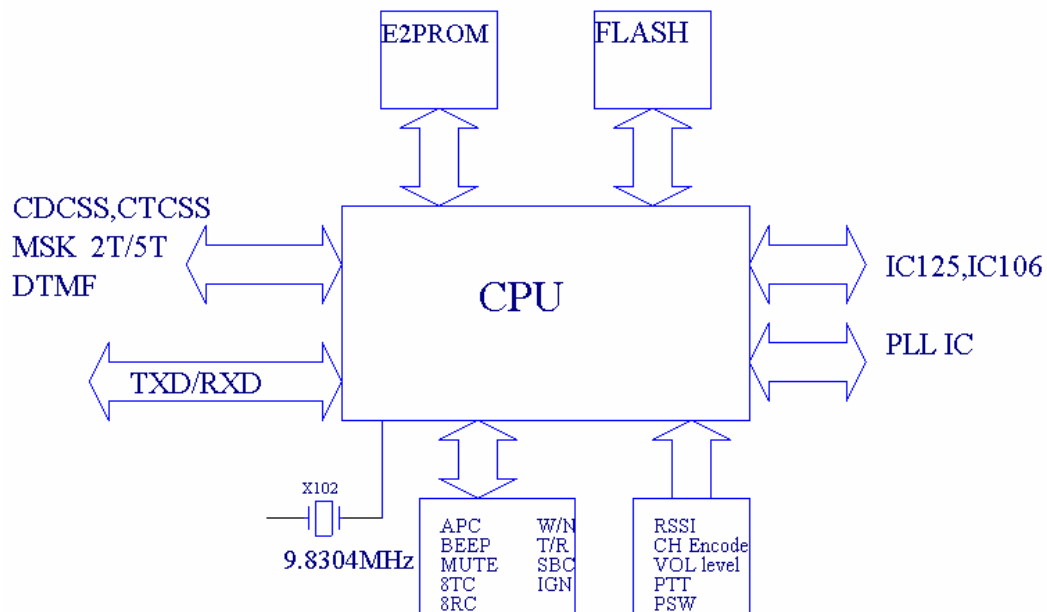


Figure 4 Control Circuit

### 5.2 Power Supply

Power supply of the radio is derived from the battery which supplies battery B+. D135 and D137 are over-voltage protection Diodes. Power-on/off can be controlled by software.

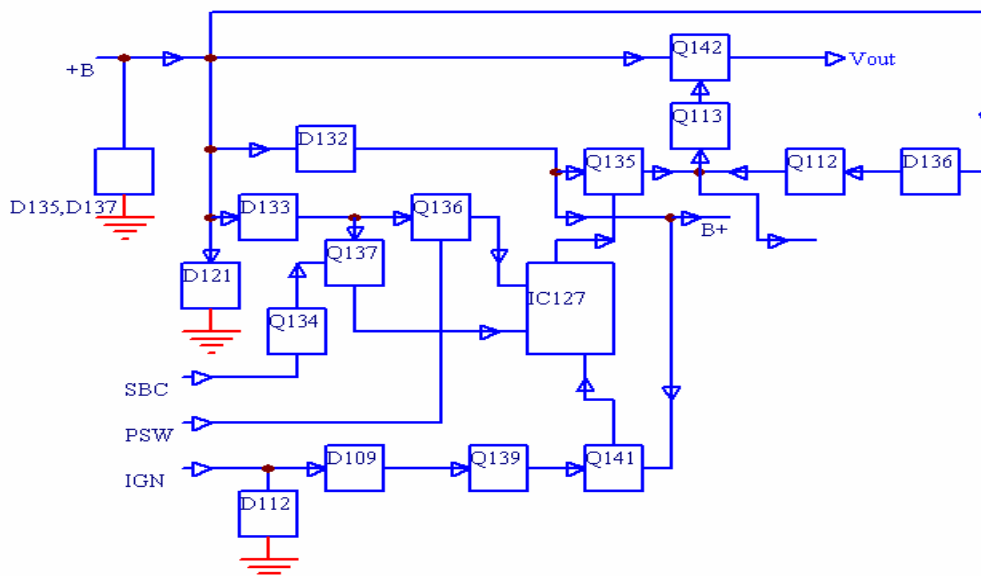


Figure 5 Power Switch Circuit

Vout provides power supply to IC115, IC114, IC113, and IC111, which produces 8V, 9V, 5V, and 3.3V voltage to the circuit.

## 6. Display Circuit

Display circuit is comprised of CPU (IC503), LCD module, LED and other components. Radio features are programmable by PF1-PF6. Data is displayed on the 12-digit and 4-digit dot matrix LCD in alphanumeric form.

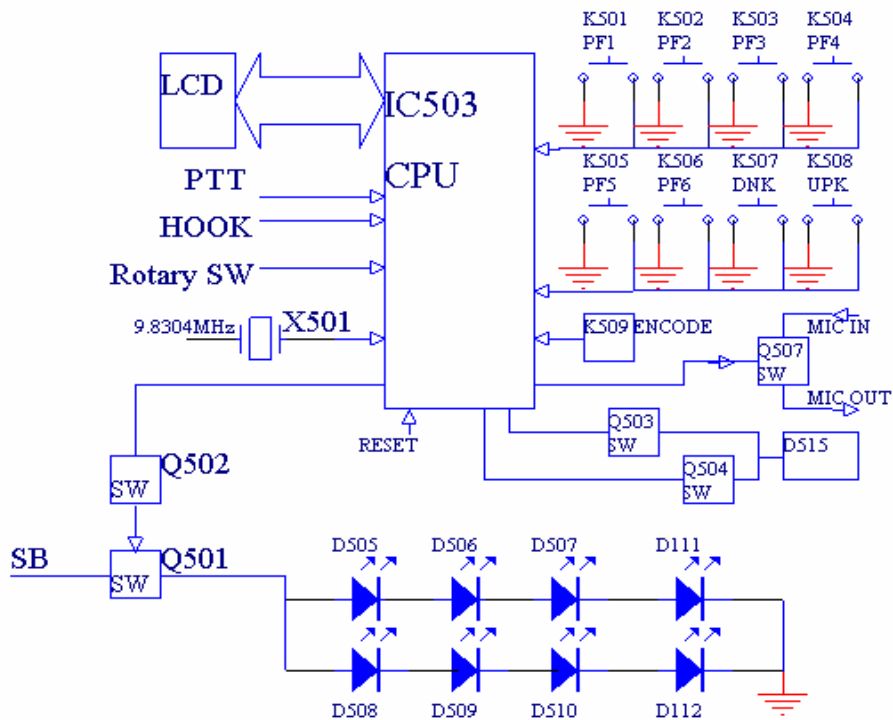


Figure 6 Display Circuit

## Semiconductor Data

1. Voltage Supply: TA7805F (Display Unit IC501): Providing supply voltage.
2. Voltage Detector: R3111H421C(Display Unit IC502)

### 2-1.Pin Function

Pin No.	Name	I/O	Function
1	Vout	O	Reset.
2	GND		GND.
3	Vin	I	Supply voltage.

3. Display CPU: UPD780112(Display Unit IC503)

### 3-1.Pin Function

Pin No.	Name	I/O	Function
1	AVref		+5V.
2	AVss		GND.
3	IC(vpp)		Internal connected.
4	VDD		+5V.
5	Vss		GND.
6	X1		Connection to crystal.
7	X2		
8	RESET	I	CPU reset.
9	XT1		+5V.
10	XT2		Not used.
11	SHIFT		Beat Shift.
12	Mute		MIC Mute.
13	RSW3		Not used.
14	RSW2		Not used.
15	RSW0(DN)	I	Rotary SW0 (down).
16	RSW1(UP)	I	Rotary SW1 (up).
17	LCDBL	O	LCD backlight.
18	LCDCS	O	LCD control signal output.
19	LCDSOD	O	LCD data read.
20	LCDDAT	O	LCD data write.
21	LCDCLK	O	Clock output for LCD driver.
22	EVss		GND.
23	EVdd		+5V.
24	MICDAT	O	Serial data output for keypad MIC.
25	OUT1		Not used.
26	RXD1	I	Serial data input.
27	TXD1	O	Serial data output.

28	HMBL		MIC backlight control signal output.
29	HOOK/RXD0		Hook signal input/ Serial data input.
30	TXD0	O	PC commands (TXD)/connects to PTT.
31	RLED	O	Red LED output.
32	GLED	O	Green LED output.
33	PTT	O	PTT/connect to TXD0.
34	DNKEY	I	Up key.
35	UPKEY	I	Down key.
36	KEYBL	I	Key backlight.
37	IN1		Not used.
38	IN2		Not used.
39	PF6	I	PF6 Key Input.
40	PF5	I	PF5 Key Input.
41	PF4	I	PF4 Key Input.
42	PF3	I	PF3 Key Input.
43	PF2	I	PF2 Key Input.
44	PF1	I	PF1 Key Input.

4. Flash ROM: AT29C020-90T1(TX-RX Unit IC103)

4-1 Pin Function

Pin No.	Name	I/O	Function
1~6, 9~20, 31	A18~A0	I	Flash ROM address bus.
7	WR	I	Flash ROM write enable.
8	VCC		+5V.
21~23, 25~29	D0~D7	I/O	Flash ROM data bus.
24	VSS		GND.
30	CE	I	Flash ROM chip enable.
32	OE	I	Flash ROM output enable.

5. EEPROM: AT2408N12.5S(TX-RX Unit IC105)

5-1 Pin Function

Pin No.	Name	I/O	Function
1~3	A0~A2	I	Address inputs.
4	GND		GND.
5	SDA	I/O	Serial Data.
6	SCL		Serial clock input.
7	TEST		Test.
8	VCC		+5V.

**6. Audio processor: AK2346 (TX-RX Unit IC106)**
**6-1 Pin Function**

Pin No.	Name	I/O	Function
1	AGNDIN	I	Analog ground input pin.
2	AGND	O	Analog ground output pin.
3	TXIN	I	Transmit audio signal input pin.
4	TXINO	O	TXA1 feedback output pin.
5	LIMLV	I	Limit level adjuster pin.
6	EXTLIMIN	I	External signal input pin pre-limiter circuit.
7	MOD	O	The modulated transmit signal output pin.
8	VSS		GND.
9	TCLK	O	Clock output pin for MSK transmission data.
10	TDATA	I	MSK transmission data input pin. Data are latched synchronizing with the TCLK rising edge.
11	DI/O	I/O	Serial data input and output pin. Input for register setting data and output for MSK receive data.
12	RDF/FC	O	MSK signal received flag and frame detection signal output pin.
13	SCLK	I	Clock input pin for serial data I/O.
14	DIR	I	Serial data I/O control pin.
15	XOUT	I	Crystal oscillator connecting input pin.
16	XIN	I/O	Crystal oscillator connecting input and output pin.
17	VDD		Positive power supply pin.
18	EXPOUT	O	Expander and VR4 output pin.
19	RXAFIN	I	Receive audio signal input pin.
20	RXAF	O	Receive audio signal output pin.
21	RXLPFO	O	Receive LPF output pin.
22	RXINO	O	RXA1 feedback output pin.
23	RXIN	I	Demodulated audio signal input pin.
24	TEST	I	Test register control input pin.

**7. DTMF Receiver: LC73872M (TX-RX Unit IC122)**
**7-1 Pin Function**

Pin No.	Name	I/O	Description
1	INPUT	I	Signal input.
2	NC		No connection.
3	PD	I	The IC goes to lower power mode when this pin is pulled high.
4	OSCO	O	Oscillator output.
5	OSCI	I	Oscillator input.
6	NC		No connection.
7	V <sub>SS</sub>		GND.
8	LOAD	I	Inputting a clock to this pin allows the serial data to be output two or more times.
9	SD	O	The decoded DTMF signal is output.
10	ACK	I	Shifting out data from SD pin.
11	STD	O	A high level indicates the presence of a DTMF signal.
12	EST	O	A high level indicates the presence of a DTMF signal.
13	NC		No connection.
14	V <sub>DD</sub>		+5V.

**8. D/A converter with buffer amplifier: M62364FP (TX-RX Unit IC125)**
**8-1 Pin Function**

Pin No.	Name	I/O	Description
1,4,9,12,13,16,21,24	V <sub>IN1</sub> ~V <sub>IN8</sub>	I	D/A converter input.
2,3,10,11,14,15,22,23	V <sub>OUT1</sub> ~V <sub>OUT8</sub>	O	D/A converter output with 8-bit resolution.
5	V <sub>DD</sub>		+5V.
6	LD	I	A low state enables data loading to shift register.
7	CLK	I	Shift clock input.
8	DI	I	Serial data input.
17	DO	O	Serial data output.
18	V <sub>DAref</sub>	I	D/A Converter reference voltage input.
19	RESET	I	Reset 8-bit latches.
20	GND		GND.

**9. Power amplifier: TDA8561Q (TX-RX Unit IC126)**
**9-1 Pin Function**

Pin No.	Name	I/O	Description
1	-INV1	I	Non-inverting input 1.
2	GND(S)		Signal ground.
3	INV2	I	Inverting input 2.
4	RR		Supply voltage ripple rejection.
5	VP1		Supply voltage.
6	OUT1	O	Output 1.
7	GND1		Power ground 1.
8	OUT2	O	Output 2.
9	NC		No connection.
10	OUT3	O	Output 3.
11	GND2		Power ground 2.
12	OUT4	O	Output 4.
13	VP2		Supply voltage.
14	MODE	I	Mode select switch input.
15	INV3	I	Inverting input 3.
16	VDIAG	O	Diagnostic output.
17	-INV4	I	Non-inverting input 4.

10. Positive voltage regulator : XC62FP3302P (TX-RX Unit IC111)、TA7805F (TX-RX Unit IC113)、TA78L09 (TX-RX Unit IC114)、TA7808S (TX-RX Unit IC115).
11. Amplifier: NJM2904V(TX-RX Unit IC104、TX-RX Unit IC110)、TA75W558FU(TX-RX Unit IC107)、TC75W51FU(TX-RX Unit IC108)、NJM4558M(TX-RX Unit IC109)、TA75S01F(TX-RX Unit IC116、TX-RX Unit IC117)、TA75W01FU(TX-RX Unit IC118).
12. IF detector: TA31136FN (TX-RX Unit IC119).
13. Dual D-type Flip-flop: TC4013BF (TX-RX Unit IC127).
14. RF PLL Frequency Synthesizers: ADF4111 (TX-RX Unit IC801).

**15. CPU: M16C (Tx-Rx Unit IC120)**
**15-1 Pin Function**

PIN No.	PORT	PIN NAME	I/O	DESCRIPTION
1	P94/DA1	2TN/5TN	I	2-tone/5-tone decode pulse input
2	P93/DA0	DTMF	O	DTMF/2Tone/5Tone/BEEP output
3	P92	SBC	O	SB power switch control. H: off L: on
4	P91	AFDIO	I/O	AK2346 DATA I/O (SDAT)
5	P90	AFSCLK	O	AK2346 serial clock (SCLK)
6	BYTE	BYTE	I	+5V(5C)
7	CNVSS	CNVSS	I	GND
8	P87	PA	O	MIC PA switch control PA: H
9	P86	DACSTB	O	DA conversion strobe output
10	RESET	RESET	I	Reset
11	XOUT	XOUT	O	Clock output
12	VSS	VSS	I	GND
13	XIN	XIN	I	Clock input
14	VCC	VCC	I	+5V
15	P85/NMI	NMI	I	NMI, usually not use
16	P84/INT2	AFRDF	I	Bandpass MSK receive detect (RDF/FD)
17	P83/INT1	DTMFSTD	I	DTMF decode detect Detect: H
18	P82/INT0	AUX2	I/O	PCB AUX 2 (input)
19	P81/TA4in	AUX3	I/O	AUX3 port (input)
20	P80/TA4out	AUX4	I/O	AUX4 port (input) (output)
21	P77/TA3in	SPMUTE	O	SP Mute Mute: H
22	P76/TA3out	TO	O	CTCSS/CDCSS modulation output
23	P75/TA2in	EMICC	O	External MIC control External MIC: H
24	P74/TA2out	AFTDATA	O	Bandpass chip MSK serial data(TDATA)
25	P73/TA1in	AFTCLK	I	Bandpass chip MSK serial clock(TCLK)
26	P72/TA1out	AFDIR	O	Bandpass chip I/O control (DIR)
27	P71/RXD2	RXD2	I	Serial data input
28	P70/TXD2	TXD2	I	Serial data output
29	P67/TXD1	TXD1	O	Acc comm2 (serial data output)
30	P66/RXD1	RXD1	I	Acc comm2 (serial data input)
31	P65	AUX5	I/O	AUX5 port (output)
32	P64	AUX6	I/O	AUX6 port (output)
33	P63	TXD0	O	Acc comm1(serial data output)
34	P62	RXD0	I	Acc comm1(serial data input)
35	P61	AUX7	I/O	AUX7 port (output)
36	P60	AUX1	I/O	AUX1 port (input)
37	P57	RDY	I	Pull Up



38	P56	NC	O	NC (left floating)
39	P55	HOLD	O	NC (left floating)
40	P54	NC	O	NC (left floating)
41	P53	NC	O	NC (left floating)
42	P52	RD	O	Read (for expansion)
43	P51	NC	O	NC (left floating)
44	P50	WR	O	Write (for expansion)
45	P47	HNC	O	Horn alert control On: H
46	P46	SHIFT	O	Clock frequency shift On: H
47	P45	W/N	O	W/N switch W: L
48	P44	CS0	O	Signal select (expansion chip)
49	A19	A19	O	NC
50~59	A18~A9	A18~A9	O	FLASHROM address bus
60	VCC	VCC	I	+5V
61	A8	A8	O	FLASHROM address bus
62	VSS	VSS	I	GND
63~70	A7~A0	A7~A0	O	FLASHROM address bus
71	P17	8RC	O	8R power supply control RX: H
72	P16	8TC	O	8T power supply control TX: H
73	P15	RX	O	TX/RX VCO switch RX: L
74	P14	EEPDAT	I/O	EEPROM data input/output
75	P13	EEPCLK	O	EEPROM clock output
		DACLK	O	DA clock output
76	P12	PLLUL	I	PLL unlock detect Unlock: L
77	P11	PLLSTB	O	PLL strobe output Lock: L
78	P10	AFMUTE	O	AF Mute (RX) Mute: H
79~86	D7~ D0	D7~ D0		FLASHROM address bus
87	P10	PWR	I	[PWR] key input On: L
88	P10	IGN	I	Ignition sense input H: off L: on
89	P10	PLLDAT	O	PLL data output
		DADAT	O	DA data output
90	P10	PLLCLK	O	PLL clock output
91	AN3	TEMP	I	Temperature input
92	AN2	RSSQL	I	RSSI input
93	AN1	ANLSQL	I	SQL input (analogue)
94	AVss	AVss	I	GND
95	AN0	TI	I	CTCSS/CDCSS signal input
96	VREF	VREF	I	Reference voltage input
97	AVCC	AVCC	I	GND
98	P97/Sin4	DTMFPD	O	DTMF chip power supply control No power: H
99	P96/Sout4	DTMFCLK	O	DTMF chip decode clock output
100	P95/Clk4	DTMFDAT	I	DTMF chip decode clock input

## Component Description

### 1. TX-RX Unit

Ref. No.	Part Name	Type	Description
IC102	IC	Power module	Power module
IC103	IC	AT29C02-90T1	Flash ROM
IC104	IC	NJM2904V	Single-supply dual operational amplifier
IC105	IC	AT2408N12.5S	EEPROM
IC106	IC	AK2346	Audio processor
IC107	IC	TA75W558FU	Dual operational amplifier
IC108	IC	TC75W51FU	Dual operational amplifier
IC109	IC	NJM4558M	Dual operational amplifier
IC110	IC	NJM2904V	Single-supply dual operational amplifier
IC111	IC	XC62FP3302P	Positive voltage regulator
IC113	IC	TA7805F	Positive voltage regulator
IC114	IC	TA78L09	Positive voltage regulator
IC115	IC	TA7805S	Positive voltage regulator
IC116	IC	TA75S01F	Single operational amplifier
IC117	IC	TA75S01F	Single operational amplifier
IC118	IC	TA75W01FU	Dual operational amplifier
IC119	IC	TA31136FN	IF detector
IC120	IC	M16C	CPU
IC121	IC	BU4066BCFV	Quad analog switch
IC122	IC	LC73872M	DTMF Receiver
IC125	IC	M62364FP	D/A converter with buffer amplifiers
IC126	IC	TDA8561Q	Power amplifier
IC127	IC	TC4013BF	Dual D-type Flip-flop

### 2. DISPLAY UNIT

Ref. No.	Part Name	Type	Description
IC501	IC	TA7805F	Voltage supply.
IC 502	IC	R3111H421C	Voltage detector.
IC 503	IC	UPD780112	Display CPU.

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C278	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T7C	
R101	3001066830000	Resistor 0603 68K $\Omega$ J 1/10W(RoHS)	T9E	
R102	3001068230010	Resistor 0603 82K $\Omega$ J 1/10W(RoHS)	T7E	
R103	3001063940010	Resistor 0603 390K $\Omega$ J 1/10W RCT03394JTP(RoHS)	T7E	
R104	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T7E	
R105	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B4L	
R106	3001064740010	Resistor 0603 470K $\Omega$ J 1/10W(RoHS)	B8I	
R107	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B3M	
R108	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B8I	
R109	3001062200000	Resistor 0603 22 $\Omega$ J 1/10W(RoHS)	B9H	
R110	3001062240010	Resistor 0603 220K $\Omega$ J 1/10W(RoHS)	B9H	
R111	3001064740010	Resistor 0603 470K $\Omega$ J 1/10W(RoHS)	B9H	
R112	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T8G	
R113	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T8G	
R114	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T8G	
R115	NC		NC	
R116	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B5E	
R117	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T5D	
R118	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B9H	
R119	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	T5D	
R120	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B9J	
R121	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T10C	
R122	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T10C	
R123	3001061520000	Resistor 0603 1.5K $\Omega$ J 1/10W(RoHS)	B8I	
R124	3001061520000	Resistor 0603 1.5K $\Omega$ J 1/10W(RoHS)	T10J	
R125	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T10B	
R126	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T6H	
R127	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B5D	
R128	3001061530010	Resistor 0603 15K $\Omega$ J 1/10W(RoHS)	B4E	
R129	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B5E	
R130	3001061510000	Resistor 0603 150 $\Omega$ J 1/10W(RoHS)	T8I	
R131	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B4E	
R132	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	T8H	
R133	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B7D	
R134	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T8I	
R135	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B9F	
R136	3001064700000	Resistor 0603 47 $\Omega$ J 1/10W(RoHS)	T8I	
R137	3001063300000	Resistor 0603 33 $\Omega$ J 1/10W RCT03330JTP(RoHS)	T8H	
R138	3001063330010	Resistor 0603 33K $\Omega$ J 1/10W RCT03333J(RoHS)	B8F	
R139	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B8F	
R140	3001061010000	Resistor 0603 100 $\Omega$ J 1/10W(RoHS)	B8F	
R141	3001063310010	Resistor 0603 330 $\Omega$ J 1/10W RCT03331JTP(RoHS)	B8F	
R142	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	B8F	
R143	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	T8I	
R144	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B8E	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
R145	3001062710000	Resistor 0603 270 $\Omega$ J 1/10W(RoHS)	B7E	
R146	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B5F	
R147	3001061800000	Resistor 0603 18 $\Omega$ J 1/10W(RoHS)	B7E	
R148	3001062710000	Resistor 0603 270 $\Omega$ J 1/10W(RoHS)	B7E	
R149	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	B5G	
R150	3001064710000	Resistor 0603 470 $\Omega$ J 1/10W(RoHS)	B5G	
R151	3001061800000	Resistor 0603 18 $\Omega$ J 1/10W(RoHS)	B5G	
R152	3001061800000	Resistor 0603 18 $\Omega$ J 1/10W(RoHS)	B9D	
R153	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B5H	
R154	3001062200000	Resistor 0603 22 $\Omega$ J 1/10W(RoHS)	B5H	
R155	3001064710000	Resistor 0603 470 $\Omega$ J 1/10W(RoHS)	B5H	
R156	3001063310010	Resistor 0603 330 $\Omega$ J 1/10W RCT03331JTP(RoHS)	B5H	
R157	3001061800000	Resistor 0603 18 $\Omega$ J 1/10W(RoHS)	B5H	
R159	3001062240010	Resistor 0603 220K $\Omega$ J 1/10W(RoHS)	B5E	
R160	3001078210000	Resistor 0805 820 $\Omega$ J 1/8W(RoHS)	T3F	
R161	3001075690000	Resistor 0805 5.6 $\Omega$ J 1/8W(RoHS)	T3F	
R163	3001078210000	Resistor 0805 820 $\Omega$ J 1/8W(RoHS)	T3F	
R164	3001063330010	Resistor 0603 33K $\Omega$ J 1/10W RCT03333J(RoHS)	B7K	
R165	3001061520000	Resistor 0603 1.5K $\Omega$ J 1/10W(RoHS)	B9K	
R166	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T4H	
R167	3001064700000	Resistor 0603 47 $\Omega$ J 1/10W(RoHS)	T7L	
R168	3001061010000	Resistor 0603 100 $\Omega$ J 1/10W(RoHS)	B4E	
R169	3001063320000	Resistor 0603 3.3K $\Omega$ J 1/10W(RoHS)	B8E	
R171	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T7L	
R172	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B5E	
R173	3001063340000	Resistor 0603 330K $\Omega$ J 1/10W(RoHS)	B4E	
R174	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B3A	
R175	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B3A	
R176	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B3L	
R177	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B2L	
R178	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B3M	
R179	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B2M	
R180	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B9L	
R181	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B9L	
R182	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B9H	
R183	3001063330010	Resistor 0603 33K $\Omega$ J 1/10W RCT03333J(RoHS)	T9D	
R184	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B8H	
R185	3001064740010	Resistor 0603 470K $\Omega$ J 1/10W(RoHS)	T9D	
R186	3001063930010	Resistor 0603 39K $\Omega$ J 1/10W(RoHS)	T9D	TM-800
R187	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T9D	TM-800
R188	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T9E	
R189	3001066230010	Resistor 0603 62K $\Omega$ J 1/10W(RoHS)	T8E	
R190	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T8D	
R191	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B7K	
R192	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	B9J	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
R193	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T8E	
R194	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T9E	
R195	3001065130010	Resistor 0603 51K $\Omega$ J 1/10W(RoHS)	T8A	
R196	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T8A	
R197	3001063340000	Resistor 0603 330K $\Omega$ J 1/10W(RoHS)	T8A	
R198	3001063930010	Resistor 0603 39K $\Omega$ J 1/10W(RoHS)	T9A	TM-800
R199	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T8A	
R200	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T7E	
R201	3001061530010	Resistor 0603 15K $\Omega$ J 1/10W(RoHS)	T7D	
R202	3001069120000	Resistor 0603 9.1K $\Omega$ J 1/10W(RoHS)	T8B	
R203	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T8B	
R204	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	T9E	
R205	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T8B	
R206	3001065630000	Resistor 0603 56K $\Omega$ J 1/10W(RoHS)	T8C	
R207	3001061840000	Resistor 0603 180K $\Omega$ J 1/10W(RoHS)	T7D	
R208	3001061840000	Resistor 0603 180K $\Omega$ J 1/10W(RoHS)	T7D	
R209	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	T7D	
R210	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T7D	
R211	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B4K	
R212	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T10M	
R213	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T9K	
R214	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T9K	
R215	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T8D	
R216	3001061540000	Resistor 0603 150K $\Omega$ J 1/10W(RoHS)	T8D	
R217	3001061830010	Resistor 0603 18K $\Omega$ J 1/10W(RoHS)	T8D	
R218	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T8E	
R219	3001061530010	Resistor 0603 15K $\Omega$ J 1/10W(RoHS)	T6H	
R220	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B6H	
R221	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B5D	
R222	3001066820000	Resistor 0603 6.8K $\Omega$ J 1/10W(RoHS)	B6G	
R223	3001065600000	Resistor 0603 56 $\Omega$ J 1/10W(RoHS)	T8H	
R224	3001066820000	Resistor 0603 6.8K $\Omega$ J 1/10W(RoHS)	B6I	
R225	3001063920000	Resistor 0603 3.9K $\Omega$ J 1/10W(RoHS)	B7G	
R226	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B6I	
R227	3001061530010	Resistor 0603 15K $\Omega$ J 1/10W(RoHS)	T6F	
R228	3001061800000	Resistor 0603 18 $\Omega$ J 1/10W(RoHS)	T8I	
R229	3001061010000	Resistor 0603 100 $\Omega$ J 1/10W(RoHS)	T6I	
R230	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	B6F	
R231	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	T6I	
R232	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B6F	
R233	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B5H	
R234	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T6H	
R235	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B6F	
R236	3001061010000	Resistor 0603 100 $\Omega$ J 1/10W(RoHS)	T6H	
R237	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T6H	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
R238	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	T6J	
R239	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B6E	
R240	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T6H	
R241	3001062710000	Resistor 0603 270 $\Omega$ J 1/10W(RoHS)	B9D	
R242	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B7E	
R243	3001062710000	Resistor 0603 270 $\Omega$ J 1/10W(RoHS)	B9D	
R248	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	T7L	
R249	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B6C	
R250	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	T6L	
R251	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B5D	
R252	3001050000000	Resistor 0402 0 $\Omega$ J 1/16W(RoHS)	B9M	
R253	3001064700000	Resistor 0603 47 $\Omega$ J 1/10W(RoHS)	B6C	
R254	3001061800000	Resistor 0603 18 $\Omega$ J 1/10W(RoHS)	B7C	TM-800
R255	3001066820000	Resistor 0603 6.8K $\Omega$ J 1/10W(RoHS)	B7C	
R256	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B7C	
R257	3001066800000	Resistor 0603 68 $\Omega$ J 1/10W(RoHS)	B7D	
R258	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B7C	
R259	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	T9E	
R260	3001050000000	Resistor 0402 0 $\Omega$ J 1/16W(RoHS)	B8M	
R261	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T9L	
R262	3001061010000	Resistor 0603 100 $\Omega$ J 1/10W(RoHS)	T9K	
R264	3001061010000	Resistor 0603 100 $\Omega$ J 1/10W(RoHS)	T9K	
R265	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T9L	
R266	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T9L	
R267	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T9L	
R268	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T9L	
R270	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B7K	
R271	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B2K	
R272	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B7K	
R273	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B9K	
R274	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B8K	
R275	3001065690000	Resistor 0603 5.6 $\Omega$ J 1/10W(RoHS)	B7C	
R277	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B7K	
R278	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B9J	
R279	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B8J	
R280	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B8K	
R281	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B9K	
R282	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	B8J	
R283	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B9J	
R284	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	B8K	
R285	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B8K	
R286	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B8J	
R287	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T8C	
R288	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T8C	
R289	3001068220000	Resistor 0603 8.2K $\Omega$ J 1/10W(RoHS)	T8D	TM-800

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
R238	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	T6J	
R239	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B6E	
R240	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T6H	
R241	3001062710000	Resistor 0603 270 $\Omega$ J 1/10W(RoHS)	B9D	
R242	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B7E	
R243	3001062710000	Resistor 0603 270 $\Omega$ J 1/10W(RoHS)	B9D	
R248	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	T7L	
R249	3001062220000	Resistor 0603 2.2K $\Omega$ J 1/10W(RoHS)	B6C	
R290	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T8D	
R291	3001061530010	Resistor 0603 15K $\Omega$ J 1/10W(RoHS)	T9A	TM-800
R292	3001061540000	Resistor 0603 150K $\Omega$ J 1/10W(RoHS)	T8C	
R294	3001061050010	Resistor 0603 1M $\Omega$ J 1/10W(RoHS)	T8C	
R295	3001066830000	Resistor 0603 68K $\Omega$ J 1/10W(RoHS)	T7C	
R297	3001064740010	Resistor 0603 470K $\Omega$ J 1/10W(RoHS)	T8D	
R298	3001061230000	Resistor 0603 12K $\Omega$ J 1/10W(RoHS)	T8C	
R300	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T7B	
R301	3001061050010	Resistor 0603 1M $\Omega$ J 1/10W(RoHS)	T10B	
R302	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	T7C	
R303	3001065630000	Resistor 0603 56K $\Omega$ J 1/10W(RoHS)	T9C	
R304	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T7C	
R305	3001063330010	Resistor 0603 33K $\Omega$ J 1/10W RCT03333J(RoHS)	B6M	
R306	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B7M	
R307	3001068210010	Resistor 0603 820 $\Omega$ J 1/10W RCT03821JTP(RoHS)	B7C	
R308	3001068210010	Resistor 0603 820 $\Omega$ J 1/10W RCT03821JTP(RoHS)	B7C	
R309	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	T9K	
R310	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	T9L	
R311	3001063320000	Resistor 0603 3.3K $\Omega$ J 1/10W(RoHS)	B8E	
R312	3001062200000	Resistor 0603 22 $\Omega$ J 1/10W(RoHS)	B8E	
R313	3001063330010	Resistor 0603 33K $\Omega$ J 1/10W RCT03333J(RoHS)	B10K	
R314	3001063300000	Resistor 0603 33 $\Omega$ J 1/10W RCT03330JTP(RoHS)	B8E	
R315	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B8E	
R316	3001062200000	Resistor 0603 22 $\Omega$ J 1/10W(RoHS)	B8E	
R317	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B7J	
R318	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B7J	
R319	3001062240010	Resistor 0603 220K $\Omega$ J 1/10W(RoHS)	T8C	
R320	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T7D	
R321	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T8D	
R322	3001066830000	Resistor 0603 68K $\Omega$ J 1/10W(RoHS)	B6J	
R324	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B6J	
R325	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B6J	
R326	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B6G	
R327	3001063340000	Resistor 0603 330K $\Omega$ J 1/10W(RoHS)	B7J	
R328	3001063310010	Resistor 0603 330 $\Omega$ J 1/10W RCT03331JTP(RoHS)	B7K	
R329	3001061530010	Resistor 0603 15K $\Omega$ J 1/10W(RoHS)	B6F	
R330	3001063320000	Resistor 0603 3.3K $\Omega$ J 1/10W(RoHS)	B6K	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
R331	3001061840000	Resistor 0603 180K $\Omega$ J 1/10W(RoHS)	B6G	
R332	3001062730010	Resistor 0603 27K $\Omega$ J 1/10W(RoHS)	B7F	
R334	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B7G	
R335	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B7J	
R336	3001062240010	Resistor 0603 220K $\Omega$ J 1/10W(RoHS)	B6F	
R337	3001061820000	Resistor 0603 1.8K $\Omega$ J 1/10W(RoHS)	B7F	TM-800
R338	3001063310010	Resistor 0603 330 $\Omega$ J 1/10W RCT03331JTP(RoHS)	B7F	
R339	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B7H	
R340	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B5J	
R341	3001061520000	Resistor 0603 1.5K $\Omega$ J 1/10W(RoHS)	B9K	
R342	3001061520000	Resistor 0603 1.5K $\Omega$ J 1/10W(RoHS)	B5J	
R343	3001061220000	Resistor 0603 1.2K $\Omega$ J 1/10W(RoHS)	T5E	
R344	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T6E	
R345	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B5J	
R346	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T6E	
R347	3001062740010	Resistor 0603 270K $\Omega$ J 1/10W(RoHS)	T6E	
R348	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B5K	
R349	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T6E	
R350	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B6F	
R351	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	B5K	
R352	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T6D	TM-800
R353	3001061530010	Resistor 0603 15K $\Omega$ J 1/10W(RoHS)	T6D	TM-800
R355	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	B6H	
R356	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B3M	
R357	3001063330010	Resistor 0603 33K $\Omega$ J 1/10W RCT03333J(RoHS)	B3L	
R358	3001064710000	Resistor 0603 470 $\Omega$ J 1/10W(RoHS)	B3L	
R360	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T3D	
R361	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	B3K	
R362	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B2K	
R363	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B3L	
R364	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B3L	
R365	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B3L	
R366	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B3K	
R367	3001063330010	Resistor 0603 33K $\Omega$ J 1/10W RCT03333J(RoHS)	B2L	
R368	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B10H	
R369	3001061540000	Resistor 0603 150K $\Omega$ J 1/10W(RoHS)	T8C	
R370	3001068220000	Resistor 0603 8.2K $\Omega$ J 1/10W(RoHS)	T8C	
R371	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T8C	
R372	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T8B	
R373	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T8C	
R374	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T7C	
R375	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B7L	
R376	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	B5L	
R377	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B5K	
R378	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	B5L	



# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
R380	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B5M	
R381	3001064740010	Resistor 0603 470K $\Omega$ J 1/10W(RoHS)	B5M	
R382	3001064740010	Resistor 0603 470K $\Omega$ J 1/10W(RoHS)	B5M	
R383	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B3L	
R385	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B3K	
R386	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B3K	
R387	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B2K	
R388	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	B6I	
R389	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B10H	
R390	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T5D	
R392	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T8H	
R490	3001065120000	Resistor 0603 5.1K $\Omega$ J 1/10W(RoHS)	B8K	
R491	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	B8K	
R601	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T6M	
R602	3001063920000	Resistor 0603 3.9K $\Omega$ J 1/10W(RoHS)	T7M	
R603	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T7M	
R604	3001062720000	Resistor 0603 2.7K $\Omega$ J 1/10W(RoHS)	T7N	
R605	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T7N	
R606	3001063310010	Resistor 0603 330 $\Omega$ J 1/10W RCT03331JTP(RoHS)	T7M	
R607	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T8M	
R608	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T9M	
R609	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T7M	
R611	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T10C	
R801	3001062240010	Resistor 0603 220K $\Omega$ J 1/10W(RoHS)	B9H	
R802	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B8H	
R803	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	B8H	
R804	3001062720000	Resistor 0603 2.7K $\Omega$ J 1/10W(RoHS)	T9H	
R805	3001063620000	Resistor 0603 3.6K $\Omega$ J 1/10W(RoHS)	T8H	U(2)
R806	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B8H	
R807	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	B9H	
R808	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T8G	
R809	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	T9G	
R810	3001061220000	Resistor 0603 1.2K $\Omega$ J 1/10W(RoHS)	T9I	U(2)
R811	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T8G	
R812	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T8G	
R813	3001061000000	Resistor 0603 10 $\Omega$ J 1/10W(RoHS)	T8G	
R814	3008162720009	Chip thin film resistor 2010 2.7K 1/2W J	B9G	U(2)
R816	3001064730000	Resistor 0603 47K $\Omega$ J 1/10W(RoHS)	T8I	
R817	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T9H	
R818	3001064740010	Resistor 0603 470K $\Omega$ J 1/10W(RoHS)	T9H	
R819	3001068210000	Resistor 0603 820 $\Omega$ F 1/10W(RoHS)	T9H	U(2)
R820	3001061020010	Resistor 0603 1K $\Omega$ J 1/10W(RoHS)	T9H	
R821	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T9I	
F102	4001000000039	Fuse MINISMDC110F / 16-02 1812-1.1A Raychem	B10I	
F101	4001000000039	Fuse MINISMDC110F / 16-02 1812-1.1A Raychem	B1K	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
R170	3001161210000	Resistor 2010 120 $\Omega$ J 1/2W(RoHS)	B5D	
R158	3001162200000	Resistor 2010 22 $\Omega$ J 1/2W(RoHS)	T5F	
R359	3001164710000	Resistor 2010 470 $\Omega$ J 1/2W(RoHS)	T4D	
CP101	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9K	
CP102	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B8K	
CP103	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B9M	
CP104	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9L	
CP105	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B9L	
CP106	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9L	
CP107	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9L	
CP108	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9L	
CP109	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B8M	
CP110	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9K	
CP111	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B8M	
CP112	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B9M	
CP113	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B8M	
CP114	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B9M	
CP116	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B8M	
CP117	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B9M	
CP118	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B9M	
CP119	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B7L	
CP120	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B7L	
CP121	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B7L	
CP122	3005050000000	Resistor array 0402 0 $\Omega$ *2 J 1/16W RTA02-2D000JTH(RoHS)	B7L	
CP126	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B7L	
CP127	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B7L	
CP128	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B7K	
CP129	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9K	
CP130	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B8K	
CP131	3005051020009	Resistor array 0402 1K*2 J 1/16W*2 RAC102D 102J	B9K	
TH101	3003991040009	Thermal resistor(0603) 100k $\Omega$ J NCP18WF104J03RB	T5M	
VR101	3002994730029	Trimmer resistor(3*3) 47K $\Omega$ J EVM3YSX50BQ4	T5J	
F103	4001000000029	Fuse MINISMDC075 / 24-02 1812-0.75A Raychem	B10G	
C101	3101061050080	Capacitor 0603 1UF Z 16V MURATA(RoHS)	B10N	
C102	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B9M	
C103	3101071050010	Capacitor 0805 1UF K 10V MURATA(RoHS)	T9D	
C104	3101064700000	Capacitor 0603 47PF J 50V MURATA(RoHS)	T8D	
C105	3101066830000	Capacitor 0603 0.068UF K 16V AVX-0603YC683KAT2A(RoHS)	T7D	
C106	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B2L	
C107	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1K	
C108	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B9G	
C109	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B7E	
C110	3101061000000	Capacitor 0603 10PF C 50V MURATA(RoHS)	B9H	
C111	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T6H	
C112	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B9I	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C113	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T8G	
C114	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B8H	
C115	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B8I	
C116	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T8G	
C117	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B8E	
C118	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T8G	
C119	3101060100010	Capacitor 0603 1PF B 50V MURATA(RoHS)	T8H	TM-800
C120	3101060100010	Capacitor 0603 1PF B 50V MURATA(RoHS)	T8H	TM-800
C121	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5H	
C122	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B9I	
C124	3101060400010	Capacitor 0603 4PF B 50V MURATA(RoHS)	T8H	TM-800
C125	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8I	
C126	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8H	
C127	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B8F	
C128	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B8F	
C129	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B8F	
C130	3101061500010	Capacitor 0603 15PF J 50V MURATA(RoHS)	B7F	
C131	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B8F	
C132	3101060900010	Capacitor 0603 9PF B 50V MURATA(RoHS)	B9D	
C133	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B4F	
C134	3101061000020	Capacitor 0603 10PF B 50V MURATA(RoHS)	B4F	TM-800
C135	3101061000020	Capacitor 0603 10PF B 50V MURATA(RoHS)	B9E	
C136	3101060100010	Capacitor 0603 1PF B 50V MURATA(RoHS)	B9E	
C137	3101060100010	Capacitor 0603 1PF B 50V MURATA(RoHS)	B9E	
C138	3101062000000	Capacitor 0603 20PF J 50V GRM1885C1H200J201D MURATA(RoHS)	B9E	
C139	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B4F	
C140	3101061200000	Capacitor 0603 12PF J 50V MURATA(RoHS)	B9E	
C141	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5G	
C142	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5E	
C143	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5G	
C144	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5G	
C145	3101060800010	Capacitor 0603 8PF B 50V MURATA(RoHS)	B4H	TM-800
C146	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5H	
C147	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B5H	
C148	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5H	
C149	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T5F	
C150	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5I	
C151	3101071200000	Capacitor 0805 12PF J 500V MURATA(RoHS)	T4F	TM-800
C152	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T5G	
C153	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T4H	
C154	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B7C	TM-800
C155	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T4G	
C156	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T4H	
C157	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T5K	
C158	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B7D	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C159	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T4J	
C160	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T3J	
C161	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T4J	
C162	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5D	
C163	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T5M	
C164	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T3J	
C165	NC		NC	
C166	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B5D	
C167	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B5C	
C168	3101080400000	Capacitor 1206 4PF C 500V MURATA(RoHS)	T4K	TM-800
C169	3101084710000	Capacitor 1206 470PF K 630V(RoHS)	T5K	
C170	3101084710000	Capacitor 1206 470PF K 630V(RoHS)	T4M	
C171	3101060590010	Capacitor 0603 0.5PF B 50V MURATA(RoHS)	T3M	
C172	3101060590010	Capacitor 0603 0.5PF B 50V MURATA(RoHS)	T3M	
C173	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B3A	
	3101080200000	Capacitor 1206 2PF C 500V MURATA(RoHS)	T2L	TM-800
C176	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B3A	
	NC		NC	TM-800
C178	3101060200010	Capacitor 0603 2PF B 50V MURATA(RoHS)	T3N	
C179	3101060590010	Capacitor 0603 0.5PF B 50V MURATA(RoHS)	T3M	
C180	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B3A	
C181	3101080300000	Capacitor 1206 3PF C 500V MURATA(RoHS)	T2L	TM-800
C182	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T9D	
C183	3101063310010	Capacitor 0603 330PF K 50V(RoHS)	T9D	
C184	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B7K	
C185	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8E	
C186	3101071040000	Capacitor 0805 0.1UF K 25V(RoHS)	T8D	TM-800
C187	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B9J	
C188	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8E	
C189	3101061050060	Capacitor 0603 1UF K 10V MURATA(RoHS)	T8A	TM-800
C190	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T8A	
C191	3101062220010	Capacitor 0603 2200PF K 50V GRM39X7R222K50PFT MURATA(RoHS)	T8A	TM-800
C192	3101062210000	Capacitor 0603 220PF J 50V MURATA(RoHS)	T7E	
C193	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T7E	
C194	3101065610000	Capacitor 0603 560PF K 50V(RoHS)	T8B	
C195	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T8B	
C196	3101066830000	Capacitor 0603 0.068UF K 16V AVX-0603YC683KAT2A(RoHS)	T7E	
C197	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T9B	
C198	3101061510000	Capacitor 0603 150PF J 50V(RoHS)	T8B	
C199	3101061230000	Capacitor 0603 0.012UF K 25V(RoHS)	T7D	
C200	3101064740020	Capacitor 0603 0.47UF Z 16V(RoHS)	T8B	
C201	3101062220010	Capacitor 0603 2200PF K 50V GRM39X7R222K50PFT MURATA(RoHS)	T7D	
C202	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T9E	
C203	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B1L	
C205	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B10F	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C206	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B10F	
C207	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	T5C	
C208	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	T5C	
C209	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B10J	
C210	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B10J	
C211	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2L	
C212	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1L	
C213	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1L	
C214	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2L	
C215	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8F	
C216	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B8I	
C217	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T10M	
C204	3101064720000	Capacitor 0603 4700PF K 50V(RoHS)	B10F	
C218	3101066800000	Capacitor 0603 68PF J 50V(RoHS)	B6E	
C219	3101061050080	Capacitor 0603 1UF Z 16V MURATA(RoHS)	B6I	
C220	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B4E	
C221	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8H	
C222	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B7C	
C223	3101060500010	Capacitor 0603 5PF B 50V MURATA(RoHS)	T8H	
C224	3101061000000	Capacitor 0603 10PF C 50V MURATA(RoHS)	T8H	
C225	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	T7I	TM-800
C226	3101060500010	Capacitor 0603 5PF B 50V MURATA(RoHS)	T8H	
C227	3101064740020	Capacitor 0603 0.47UF Z 16V(RoHS)	T10J	
C228	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T9J	
C229	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8I	
C230	3101061050080	Capacitor 0603 1UF Z 16V MURATA(RoHS)	B6I	
C231	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B9F	
C232	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B8F	
C233	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T6H	
C234	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T6F	
C235	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T7I	
C236	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T6I	
C237	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	T6I	
C238	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B8E	
C239	3101061000000	Capacitor 0603 10PF C 50V MURATA(RoHS)	B6F	
C240	3101060600010	Capacitor 0603 6PF B 50V GRM1885C1H6R0B201D MURATA(RoHS)	B8E	
C241	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B6F	
C242	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T6H	
C243	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B6F	
C244	3101064590000	★Capacitor 0603 4.5PF B 50V MURATA(RoHS)	B7D	
C245	3101064590000	★Capacitor 0603 4.5PF B 50V MURATA(RoHS)	B6D	
C246	3101060400010	Capacitor 0603 4PF B 50V MURATA(RoHS)	B5I	TM-800
C247	3101060300010	Capacitor 0603 3PF B 50V MURATA(RoHS)	B4I	TM-800
C248	3101064590000	★Capacitor 0603 4.5PF B 50V MURATA(RoHS)	B6D	
C249	3101064590000	★Capacitor 0603 4.5PF B 50V MURATA(RoHS)	B7C	

## Part List 1

### ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C250	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B6C	
C251	NC		NC	TM-800
C252	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B6C	
C253	3101080200000	Capacitor 1206 2PF C 500V MURATA(RoHS)	T2M	TM-800
C254	3101062240000	Capacitor 0603 0.22UF K 10V(RoHS)	B4E	
C255	3101060800010	Capacitor 0603 8PF B 50V MURATA(RoHS)	B7C	
C256	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B6C	
C257	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B7C	
C258	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T8K	
C259	3101080200000	Capacitor 1206 2PF C 500V MURATA(RoHS)	T4M	TM-800
C260	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T9K	
C261	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T9L	
C262	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8K	
C263	3101080100000	Capacitor 1206 1PF C 500V MURATA(RoHS)	T5N	
C264	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T6H	
C265	3101060700020	Capacitor 0603 7PF B 50V MURATA(RoHS)	T10M	
C266	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B7L	
C267	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B6K	
C268	3101061830000	Capacitor 0603 0.018UF K 25V(RoHS)	B9J	
C269	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B8K	
C270	3101061830000	Capacitor 0603 0.018UF K 25V(RoHS)	B8J	
C271	3101064720000	Capacitor 0603 4700PF K 50V(RoHS)	B8K	
C272	3101062700010	Capacitor 0603 27PF J 50V MURATA(RoHS)	B8J	
C273	3101066800000	Capacitor 0603 68PF J 50V(RoHS)	B9J	
C274	3101062700010	Capacitor 0603 27PF J 50V MURATA(RoHS)	B9K	
C275	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T7C	
C276	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8D	TM-800
C277	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T7C	
C279	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8E	
C280	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T7D	
C281	3101061050060	Capacitor 0603 1UF K 10V MURATA(RoHS)	T7B	
C282	3101062720000	Capacitor 0603 2700PF K 50V(RoHS)	T8C	
C283	3101062230020	Capacitor 0603 0.022UF K 25V MURATA(RoHS)	T9B	
C284	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T7B	
C285	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	T9A	
C286	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	T9B	
C287	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T7B	
C288	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T7C	
C289	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B7M	
C290	3101064730000	Capacitor 0603 47NF K 16V GRM39X7R473K16PT MURATA(RoHS)	B7M	
C291	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1K	
C292	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1L	
C293	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1L	
C294	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1K	
C295	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1L	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C296	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1L	
C297	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B4K	
C299	3101062240000	Capacitor 0603 0.22UF K 10V(RoHS)	B2L	
C300	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10G	
C301	3101060500010	Capacitor 0603 5PF B 50V MURATA(RoHS)	T10L	
C302	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10G	
C303	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B7E	
C304	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5E	
C305	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10I	
C306	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B8E	
C307	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10I	
C308	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B8E	
C309	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B7C	
C310	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B7E	
C311	3101073340000	Capacitor 0805 0.33UF K 16V(RoHS)	B6J	
C312	3101066800000	Capacitor 0603 68PF J 50V(RoHS)	T6L	
C313	3101062230020	Capacitor 0603 0.022UF K 25V MURATA(RoHS)	B6J	
C314	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B6J	
C315	3101063900000	Capacitor 0603 39PF J 50V(RoHS)	T7L	
C316	3101062230020	Capacitor 0603 0.022UF K 25V MURATA(RoHS)	B7K	
C317	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B7J	
C318	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B6G	
C319	3101064720000	Capacitor 0603 4700PF K 50V(RoHS)	B7G	
C320	3101061510000	Capacitor 0603 150PF J 50V(RoHS)	B6F	
C321	3101062210000	Capacitor 0603 220PF J 50V MURATA(RoHS)	B6F	
C322	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T4G	
C323	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B5K	
C324	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B6F	
C325	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T6D	
C326	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T4B	
C327	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B9I	
C328	3101064740020	Capacitor 0603 0.47UF Z 16V(RoHS)	B9I	
C329	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T4B	
C330	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B6E	
C331	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B9I	
C332	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T7L	
C333	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B4M	
C334	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T4D	
C335	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T3D	
C336	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T3D	
C337	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T4D	
C338	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B6C	
C338	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T6L	
C339	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B2K	
C340	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B4L	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C341	3101061050080	Capacitor 0603 1UF Z 16V MURATA(RoHS)	B6H	
C342	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B3K	
C343	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B8J	
C344	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T8C	
C345	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8C	
C346	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T8B	
C347	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	T8C	
C348	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T7C	
C349	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	B6L	
C350	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	B6L	
C351	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B7M	
C352	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10J	
C353	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10K	
C354	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10K	
C355	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B10L	
C356	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B10K	
C357	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B10K	
C358	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10K	
C359	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B10K	
C360	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B6F	
C361	3101061050080	Capacitor 0603 1UF Z 16V MURATA(RoHS)	B6H	
C362	3101061050080	Capacitor 0603 1UF Z 16V MURATA(RoHS)	B5K	
C363	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	B5L	
C364	3101071050010	Capacitor 0805 1UF K 10V MURATA(RoHS)	B5L	
C365	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B6M	
C367	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1N	
C368	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1M	
C371	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B5E	
C374	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B4E	
C375	NC		NC	
C377	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B2M	
C388	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B6F	
C394	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T8E	
C4	NC		NC	TM-800
C400	3101061820000	Capacitor 0603 1800PF K 50V(RoHS)	T5D	TM-800
C410	3101071050010	Capacitor 0805 1UF K 10V MURATA(RoHS)	B5M	
C411	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T4D	
C412	3101066800000	Capacitor 0603 68PF J 50V(RoHS)	B6E	
C413	3101066800000	Capacitor 0603 68PF J 50V(RoHS)	T6L	
C414	NC		NC	TM-800
C415	NC		NC	TM-800
C416	NC		NC	TM-800
C421	3101080200000	Capacitor 1206 2PF C 500V MURATA(RoHS)	T3N	TM-800
C422	3101080100000	Capacitor 1206 1PF C 500V MURATA(RoHS)	T2M	TM-800
C601	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T6M	



# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C602	3101061590010	Capacitor 0603 1.5PF B 50V MURATA(RoHS)	T6M	TM-800
C603	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T6M	TM-800
C604	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T6M	
C605	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T6M	TM-800
C606	3101060200010	Capacitor 0603 2PF B 50V MURATA(RoHS)	T6M	TM-800
C607	3101061590010	Capacitor 0603 1.5PF B 50V MURATA(RoHS)	T6M	TM-800
C608	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T7N	
C609	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T7M	
C610	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8M	
C611	3101061590010	Capacitor 0603 1.5PF B 50V MURATA(RoHS)	T8M	TM-800
C612	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T8M	TM-800
C613	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T8M	TM-800
C614	3101060200010	Capacitor 0603 2PF B 50V MURATA(RoHS)	T8M	TM-800
C615	3101061590010	Capacitor 0603 1.5PF B 50V MURATA(RoHS)	T8M	TM-800
C616	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T10M	TM-800
C617	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T9M	
C618	3101061590010	Capacitor 0603 1.5PF B 50V MURATA(RoHS)	T9M	TM-800
C619	3101063300000	Capacitor 0603 33PF J 50V MURATA(RoHS)	T9M	TM-800
C620	3101060200010	Capacitor 0603 2PF B 50V MURATA(RoHS)	T9M	TM-800
C621	3101061590010	Capacitor 0603 1.5PF B 50V MURATA(RoHS)	T9M	TM-800
C622	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T7M	
C623	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T7M	
C624	3101061040010	Capacitor 0603 0.1UF K 16V (RoHS)	T7M	
C625	3101060100010	Capacitor 0603 1PF B 50V MURATA(RoHS)	T9M	TM-800
C626	3101060100010	Capacitor 0603 1PF B 50V MURATA(RoHS)	T8M	TM-800
C627	3.10106E+12	Capacitor 0603 1PF B 50V MURATA(RoHS)	T6M	TM-800
C628	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	T7N	
C629	3101060500010	Capacitor 0603 5PF B 50V MURATA(RoHS)	T6N	TM-800
C630	3101063000010	Capacitor 0603 30PF J 50V MURATA(RoHS)	T9M	TM-800
C631	3101063000010	Capacitor 0603 30PF J 50V MURATA(RoHS)	T8M	TM-800
C632	3101063000010	Capacitor 0603 30PF J 50V MURATA(RoHS)	T6M	TM-800
C801	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B8H	
C802	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8H	
C803	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8H	
C804	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8G	
C807	3101071040000	Capacitor 0805 0.1UF K 25V(RoHS)	T9H	
C812	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T8G	TM-800
C813	3101066830000	Capacitor 0603 0.068UF K 16V AVX-0603YC683KAT2A(RoHS)	B8H	
L152	3231132720009	Coil 1.3*2.7*2TR 青岛高信	T4K	TM-800
TC101	3102992000049	Trimmer capacitor 3.2*2.5*1.25mm 10P 55V TZY2Z100A001	T6K	
TC102	3102992000049	Trimmer capacitor 3.2*2.5*1.25mm 10P 55V TZY2Z100A001	T7K	
L101	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B9M	
L102	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	T4H	
L103	3221513600000	Chip ferrite bead 1806 60 $\Omega$ $\pm$ 25% BLM41PG600SN1 MURATA(100MHz)(RoHS)	T4J	
L104	3221513600000	Chip ferrite bead 1806 60 $\Omega$ $\pm$ 25% BLM41PG600SN1 MURATA(100MHz)(RoHS)	T4J	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
L105	3215006100009	Inductor 0603 10nH LL1608-FH10NK TOKO	B4G	
L106	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B7K	
L107	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B10N	
L108	4518026000009	Trimmer IF transformer 25.2MHz 780nH $\pm$ 2%(1M-200M) 5JHH-059798026 SAGMI		
L109	3213212103000	Inductor 1008 10uH NLV25T-100J-PF Q(MIN)25 TDK(RoHS)	B6F	
L110	3213212150009	Inductor 1008 15nH NL252018T-015J Q(MIN)15 TDK	B9E	
L111	3213212150009	Inductor 1008 15nH NL252018T-015J Q(MIN)15 TDK	B9E	
L112	3213212100009	Inductor 1008 10nH NL252018T-010J Q(MIN)15 TDK	B5G	
L113	3213212220009	Inductor 1008 22nH NL252018T-022J Q(MIN)15 TDK	B5I	
L114	3213212103000	Inductor 1008 10uH NLV25T-100J-PF Q(MIN)25 TDK(RoHS)	B6C	
L115	3213212682000	Inductor 1008 6.8uH NLV25T-6R8J-PF Q(MIN)25 TDK(RoHS)	T8K	
L116	3244599682009	Transmission coil 4BLH(49798682) SAGMI	T9K	
L117	3244599682009	Transmission coil 4BLH(49798682) SAGMI	T8L	
L118	3212106150009	Inductor 0603 15nH HK160815NJ Q(MIN)12 TAIYO	T8H	
L119	3215106820009	Wound inductor 0603 82nH LLQ1608-A82N TOKO	B7D	
L120	3212106220009	Inductor 0603 22nH HK160822NJ Q(MIN)12 TAIYO	B5F	
L121	3212106120009	Inductor 0603 12nH HK160812NJ Q(MIN)8 TAIYO	B5F	TM-800
L122	3213212180009	Inductor 1008 18nH NL252018T-018J Q(MIN)15 TDK	B8E	TM-800
L123	3212106150009	Inductor 0603 15nH HK160815NJ Q(MIN)12 TAIYO	T8H	
L124	3212106150009	Inductor 0603 15nH HK160815NJ Q(MIN)12 TAIYO	T8H	
L125	3213306221019	Inductor 0603 0.22uH MLF1608DR22K Q(MIN)15 TDK	B7C	TM-800
L126	3244599682009	Transmission coil 4BLH(49798682) SAGMI	T10L	
L127	3213212100009	Inductor 1008 10nH NL252018T-010J Q(MIN)15 TDK	B5I	
L128	3213212471009	Inductor 1008 470nH NL252018T-R47J Q(MIN)30 TDK	T6H	
L129	3212106470009	Inductor 0603 47nH HK160847NJ Q(MIN)12 TAIYO	B6F	
L130	3231803011000	Air-core coil 0.8*3.0*11TR (RoHS)	T5K	
L131	3213306221019	Inductor 0603 0.22uH MLF1608DR22K Q(MIN)15 TDK	B7C	TM-800 U
L132	3231132830009	Coil 1.3*2.8*3TR	T3M	
L133	3231803011000	Coil 0.8*3.0*11TR (RoHS)	B2B	
L134	3231132830009	Coil 1.3*2.8*3TR	T4M	
L135	3244599451009	Frequency discriminating coil 450KHZ(049798713) SAGMI	T6I	
L136	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B10F	
L137	3213212220009	Inductor 1008 22nH NL252018T-022J Q(MIN)15 TDK	B8E	
L138	3231132830009	Coil 1.3*2.8*3TR	T2M	
L139	3215006120009	Inductor 0603 12nH LL1608-FS12NJ TOKO	T10M	
L140	3215006120009	Inductor 0603 12nH LL1608-FS12NJ TOKO	T10M	
L141	3212106121009	Inductor 0603 120nH HK1608R12J00 Q(MIN)12 TAIYO	T7L	
L142	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B7M	
L143	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B7L	
L144	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B7L	
L145	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B7L	
L146	3221506601009	Chip ferrite bead 0603 600 $\Omega$ $\pm$ 25% BLM18AG601SN1 MURATA(100MHz)	B9H	
L147	4518026000009	Trimmer IF transformer 25.2MHz 780nH $\pm$ 2%(1M-200M) 5JHH-059798026 SAGMI		
	#N/A	#N/A		

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
L148	3210208881009	Wound inductor 1206 880nH LQH31HNR88J03L MURATA	T7J	
L149	3210208881009	Wound inductor 1206 880nH LQH31HNR88J03L MURATA	B6D	
L150	4518026000009	Trimmer IF transformer 25.2MHz 780nH±2%(1M-200M) 5JHH-059798026 SAGAMI		
	#N/A	#N/A		
L151	4518026000009	Trimmer IF transformer 25.2MHz 780nH±2%(1M-200M) 5JHH-059798026 SAGAMI		
	#N/A	#N/A		
L601	3213212103000	Inductor 1008 10uH NLV25T-100J-PF Q(MIN)25 TDK(RoHS)	T7M	
L602	3213212471009	Inductor 1008 470nH NL252018T-R47J Q(MIN)30 TDK	T8M	
L801	3221506601009	Chip ferrite bead 0603 600 Ω ±25% BLM18AG601SN1 MURATA(100MHz)	T8H	
D101	3303060300019	Diode HVC131 1.6*0.8mm HITACHI	T7I	
D102	3303020100069	Diode MA3J74200L Panasonic	T8D	
D103	3303020100069	Diode MA3J74200L Panasonic	T7D	
D104	3303060600009	Diode HSB123 SOT-343MOD HITACHI	B5H	
D105	3303020100069	Diode MA3J74200L Panasonic	B3A	
D106	3303020100069	Diode MA3J74200L Panasonic	B3A	
D107	3302030500039	Diode UDZSTE(175.1B) 5.1V SOD-323 Rohm	B10F	
D108	3302030500039	Diode UDZSTE(175.1B) 5.1V SOD-323 Rohm	B10F	
D109	3303010500049	Diode 1SS355(Te17) SOD-123 TOSHIBA	B2L	
D110	3303020100069	Diode MA3J74200L Panasonic	B6J	
D111	3303020100069	Diode MA3J74200L Panasonic	B7F	
D112	3302030500009	Diode UDZSTE(1710B)10V SOD-323 Rohm	B2L	
D113	3302030500039	Diode UDZSTE(175.1B) 5.1V SOD-323 Rohm	T4H	
D114	3303060300019	Diode HVC131 1.6*0.8mm HITACHI	T8I	
D115	3303030100029	Diode DAN235ESOF416 1.0V 35V 10nA UHF Rohm	T6H	
D116	3303030100029	Diode DAN235ESOF416 1.0V 35V 10nA UHF Rohm	T6F	
D117	3303010500049	Diode 1SS355(Te17) SOD-123 TOSHIBA	B5D	
D118	3303010500049	Diode 1SS355(Te17) SOD-123 TOSHIBA	B3M	
D119	3303060300019	Diode HVC131 1.6*0.8mm HITACHI	T6L	
D120	3302030500049	Diode UDZSTE(174.7B)4.7V SOD-323 Rohm	T6H	
D121	3302030500019	Diode UDZSTE(1715B)15V SOD-323 Rohm	B2K	
D122	3303060300019	Diode HVC131 1.6*0.8mm HITACHI	T6L	
D124	3303210100009	Diode MA4P1250 3*2mm MACOM	T4M	
D127	3303190200009	Diode XB15A709 3*2mm TOREX	T5M	
D128	3303190200009	Diode XB15A709 3*2mm TOREX	T5M	
D129	3303020100029	Diode MA2S11100L SS-Mini 0.95V 80V 100nA UHF Panasonic	B7K	
D130	3303010500049	Diode 1SS355(Te17) SOD-123 TOSHIBA	B6J	
D131	3303010500049	Diode 1SS355(Te17) SOD-123 TOSHIBA	B9I	
D132	3303010500049	Diode 1SS355(Te17) SOD-123 TOSHIBA	B3K	
D133	3303010500049	Diode 1SS355(Te17) SOD-123 TOSHIBA	B2K	
D135	3301060400009	Diode DSM3MA1 184*105mm HITACHI	B3E	
D136	3302030500029	Diode UDZSTE(1718B)18V SOD-323 Rohm	B3K	
D138	3303060300019	Diode HVC131 1.6*0.8mm HITACHI	B6E	
D139	3303060300019	Diode HVC131 1.6*0.8mm HITACHI	B6E	
D601	3304060300029	Diode HVC350B UFP 2.8 5.0P 0.50 Ω 15V HITACHI	T10M	TM-800
D602	3304010100089	Diode 1SV279(TPH3) 1.6*0.8mm TOSHIBA	T9M	TM-800

## Part List 1

### ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
D603	3304010100089	Diode 1SV279(TPH3) 1.6*0.8mm TOSHIBA	T8M	TM-800
D604	3304010100089	Diode 1SV279(TPH3) 1.6*0.8mm TOSHIBA	T8M	TM-800
D605	3304010100089	Diode 1SV279(TPH3) 1.6*0.8mm TOSHIBA	T6M	TM-800
D606	3304010100089	Diode 1SV279(TPH3) 1.6*0.8mm TOSHIBA	T6M	TM-800
D801	3303020100029	Diode MA2S11100L SS-Mini 0.95V 80V 100nA UHF Panasonic	B9H	
Q101	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B3M	
Q102	#N/A	#N/A	B2K	
Q104	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B4L	
Q105	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B6K	
Q106	3403008000029	Transistor DTC114EKA NPN Rohm	B7H	
Q108	3403008000019	Transistor DTC114EE(TL) NPN Rohm	T7C	
Q109	3403008000019	Transistor DTC114EE(TL) NPN Rohm	T7B	
Q110	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B5J	
Q111	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B5K	
Q112	3403008000029	Transistor DTC114EKA NPN Rohm	B3L	
Q113	3403008000029	Transistor DTC114EKA NPN Rohm	B3L	
Q114	3403008000099	Transistor DTC363EU NPN Rohm	B5L	
Q115	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B5L	
Q116	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	T10J	
Q117	3503020000039	Transistor 2SK1824-T1 N-channel NEC	B9J	
Q118	3401002000049	Transistor 2SC4215(Y) NPN TOSHIBA	B6F	
Q119	3403003000009	Transistor 2SC2412K NPN Rohm	T6H	
Q120	3408002000009	Transistor 2SC3356-R24 NPN NEC	B8D	
Q121	3403003000009	Transistor 2SC2412K NPN Rohm	B6J	
Q123	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	B8I	
Q124	3401002000099	Transistor 2SC5108-Y(TE85L) NPN TOSHIBA	T8I	
Q125	3408002000019	Transistor 2SC3357-T1 NPN NEC	B7C	
Q126	3401002000099	Transistor 2SC5108-Y(TE85L) NPN TOSHIBA	B8F	
Q127	3408002000019	Transistor 2SC3357-T1 NPN NEC	B5G	
Q128	3408002000019	Transistor 2SC3357-T1 NPN NEC	B5H	
Q131	3403002000009	Transistor 2SB1132T100R PNP Rohm	B5J	
Q132	3403002000009	Transistor 2SB1132T100R PNP Rohm	B5K	
Q133	3403007000009	Transistor DTA114EE(TL) PNP Rohm	B6K	
Q134	3403008000029	Transistor DTC114EKA NPN Rohm	B2L	
Q135	3403007000019	Transistor DTA114EKA PNP Rohm	B3L	
Q136	3403007000019	Transistor DTA114EKA PNP Rohm	B2K	
Q137	3403007000019	Transistor DTA114EKA PNP Rohm	B3K	
Q138	3503020000109	Transistor 2SK508NV(K52) SMD3 N-CH 5V NEC	T9L	
Q139	3403008000029	Transistor DTC114EKA NPN Rohm	B2L	
Q140	3503020000039	Transistor 2SK1824-T1 N-channel NEC	B6F	
Q141	3403007000019	Transistor DTA114EKA PNP Rohm	B3M	
Q142	3410001000019	Transistor 2SA1641(S.T) PNP SANYO	T3D	
Q143	3503010000019	Transistor 2SJ243-T1 P-channel NEC	B5M	
Q144	3503020000109	Transistor 2SK508NV(K52) SMD3 N-CH 5V NEC	T9L	
Q145	3503020000109	Transistor 2SK508NV(K52) SMD3 N-CH 5V NEC	T9L	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
Q146	3503020000109	Transistor 2SK508NV(K52) SMD3 N-CH 5V NEC	T9L	
Q147	3408002000019	Transistor 2SC3357-T1 NPN NEC	B8E	
Q601	3408002000019	Transistor 2SC3357-T1 NPN NEC	T7M	
Q801	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B8H	
Q802	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B8H	
Q803	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	T9H	
Q804	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	T9H	
Q805	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	T9H	
Q806	3401001000049	Transistor 2SA1832(GR) PNP TOSHIBA	B8H	
Q807	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	T9I	
IC103	3612031004469	IC AT29C040-90TI 4M ATMEL	B9M	
IC104	3605008005079	IC NJM2904V 2 JRC	T9D	
IC105	3612031004449	IC AT24C64AN-10SI-2.7 64K ATMEL	B7J	
IC106	3613034001059	IC AK2346 Two-way Radio Audio Processor AKM	T9B	
IC107	3605002005479	IC TA75W558FU 2 TOSHIBA	T7D	
IC108	3605002005729	IC TC75W51FU(TE12L) 2 TOSHIBA	T8C	
IC109	3605008005120	IC NJM4558M 2 JRC(RoHS)	B6G	
IC110	3605008001699	IC NJM2904M 2 SINGLE-SUPPLY OPERATIONAL AMPLIFIER JRC	T6D	
IC111	3608015005609	IC XC62FP3502PR 3V TOREX	T8F	
IC113	3608002002089	IC TA7805F 5V Three Terminal Positive Voltage Regulators TOSHIBA	T4B	
IC114	3608002005499	IC TA78L09F OUTPUT MAX 9.45V TOSHIBA	B9I	
IC116	3605002005709	TA75S01F 1TOSHIBA	B8I	
IC117	3605002005709	TA75S01F 1 TOSHIBA	T8D	
IC118	3605002005459	TA75W01FU 2 TOSHIBA	B5E	
IC119	3603002005419	IC TA31136FN(EL) 455MHz TOSHIBA	T6I	
IC120	3610045000569	M30620FCPGP#U5C 16-BIT CMOS SINGLE-CHIP MICROCOMPUTER Renesas	B8L	
IC121	3609018001090	IC BU4066BCFV Quad analog switch IC Rohm(RoHS)	T7C	
IC122	3618029005639	IC LC73872M SANYO	B7L	
IC125	3606004005659	BUFFER AMPLIFIERS MITSUBISHI	T5E	
IC127	3607002000189	IC TC4013BF DUAL D-TYPE FLIP-FLOP TOSHIBA	B3L	
IC801	3604025004359	ADF4111BRU 1.2GHz AnalogDevices	T8G	
J102	5202015100019	chip socket53261-1590 15pin molex	T10D	
J109	5202015100019	chip socket53261-1590 15pin molex	T10F	
J112	5202005100009	chip socket53398-0590 5pin molex	T5C	
	410M800100200	TM-800U PCB FR4 1.6T/4L/2P 02(RoHS)	PCB	
X101	3701016850020	TCXO 16.8MHz TCVCXO-ENE3148A 5*3.2mm chip NDK(RoHS)	B9H	
X102	3701098340020	Crystal 9.8304MHz NX8045GB 5*8 chip NDK(RoHS)	B9J	
X103	3701368630000	Crystal oscillator 3.6864MHz NX1255GB chip NDK(RoHS)	T9B	
X104	3701357930010	Crystal 3.579545MHz NX1255GB 12*6mm chip NDK(RoHS)	B6L	
X105	3701073550009	Crystal 73.5MHz NX5032SA 5*3.2mm chip NDK	T7H	
C372	3103992260049	Electrolytic capacitor 2512 22U 16V +20% 105℃	T8F	
C373	3103992260049	Electrolytic capacitor 2512 22U 16V +20% 105℃	T9F	
C376	3103994760089	Electrolytic capacitor 2512 47U 25V +20% 105℃	T2D	
C396	3103992260049	Electrolytic capacitor 2512 22U 16V +20% 105℃	T5F	
C401	3103994760089	Electrolytic capacitor 2512 47U 25V +20% 105℃	T2C	

# Part List 1

## ■ Tx-Rx Unit

Ref. No	Part No.	Description	Address	Remark
C408	3103994760089	Electrolytic capacitor 2512 47U 25V +20% 105℃	T6C	
C409	3103994760089	Electrolytic capacitor 2512 47U 25V +20% 105℃	T5C	
C123	3104082260020	Ta-Capacitor1206 22UF +20% 10V(RoHS)	T10K	
C298	3104081060030	Ta-Capacitor1206 10UF M 16V TMCMA1C106MTR(RoHS)	B2L	
C369	3104081060000	HITACHI(RoHS)	T9D	
C370	3104084750020	HITACHI(RoHS)	B9H	
C378	3104081050000	HITACHI(RoHS)	T8B	
C379	3104084750020	HITACHI(RoHS)	T7D	
C380	3104081050000	HITACHI(RoHS)	T8A	
C381	3104082260020	Ta-Capacitor1206 22UF +20% 10V(RoHS)	T9B	
C382	3104081060000	HITACHI(RoHS)	T8F	
C383	3104084750020	HITACHI(RoHS)	T8D	
C384	3104084750020	HITACHI(RoHS)	T8D	
C385	3104204760000	Ta-Capacitor2512 47UF M 16V C型 HITACHI(RoHS)	T10K	
C386	3104084750020	HITACHI(RoHS)	T7H	
C387	3104081560019	Ta-Capacitor1206 15UF M 6.3V TMCSA0J156MTR HITACHI(F)	T6I	
C389	3104081060000	HITACHI(RoHS)	B7L	
C390	3104084750020	HITACHI(RoHS)	T8D	
C391	3104084750020	HITACHI(RoHS)	B6F	
C392	3104084750020	HITACHI(RoHS)	B7F	
C393	3104081050000	HITACHI(RoHS)	B6J	
C395	3104196860000	Ta-Capacitor1410 68UF M 6.3V(RoHS)	T5D	
C397	3104084750020	HITACHI(RoHS)	T4B	
C398	3104083350030	Ta-Capacitor1206 3.3UF M 16V TMCMA1C335MTR(RoHS)	B9I	
C399	3104083350000	HITACHI(RoHS)	B3M	
C402	3104084750000	Ta-Capacitor1206 4.7UF K 16V TMCMA1C475KTR(RoHS)	B4L	
C404	3104084750020	HITACHI(RoHS)	B8J	
C405	3104084750020	HITACHI(RoHS)	T8C	
C406	3104084750020	HITACHI(RoHS)	T5D	
C805	3104084750000	Ta-Capacitor1206 4.7UF K 16V TMCMA1C475KTR(RoHS)	B9H	
C806	3104081050010	Ta-Capacitor1206 1UF±20% 35V F931V105MAA NICHICON(RoHS)	T9I	U(2)
C808	3104081040000	HITACHI(RoHS)	T9H	
C810	3104082260020	Ta-Capacitor1206 22UF +20% 10V(RoHS)	T9H	U(2)
C811	3104082260020	Ta-Capacitor1206 22UF +20% 10V(RoHS)	T9H	U(2)
C816	3104082250020	Ta-Capacitor1206 2.2UF K 16V(RoHS)	T9G	

# Part List 1

## ■ Display Unit

Ref. No.	Material No.	Material Description	Address
R506	3001060000000	Resistor 0603 0Ω J 1/10W(RoHS)	B1C
R511	3001060000000	Resistor 0603 0Ω J 1/10W(RoHS)	B1C
R522	3001060000000	Resistor 0603 0Ω J 1/10W(RoHS)	B1C
R548	3001060000000	Resistor 0603 0Ω J 1/10W(RoHS)	B1C
R555	3001060000000	Resistor 0603 0Ω J 1/10W(RoHS)	B2B
R544	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B1A
R540	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B1C
R541	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B1C
R542	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B1C
R543	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B1C
R538	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B1D
R539	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B1D
R532	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B2B
R533	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B2B
R534	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B2B
R535	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B2B
R536	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B2B
R537	3001061020010	Resistor 0603 1KΩ J 1/10W(RoHS)	B2B
R509	3001061030010	Resistor 0603 10KΩ J 1/10W(RoHS)	B1C
R510	3001061030010	Resistor 0603 10KΩ J 1/10W(RoHS)	B1C
R508	3001061030010	Resistor 0603 10KΩ J 1/10W(RoHS)	B2C
R502	3001061040010	Resistor 0603 100KΩ J 1/10W(RoHS)	B2A
R503	3001061040010	Resistor 0603 100KΩ J 1/10W(RoHS)	B2A
R501	3001061040010	Resistor 0603 100KΩ J 1/10W(RoHS)	B2B
R512	3001061810000	Resistor 0603 180Ω J 1/10W(RoHS)	B1C
R513	3001061810000	Resistor 0603 180Ω J 1/10W(RoHS)	B1C
R549	3001062240010	Resistor 0603 220KΩ J 1/10W(RoHS)	B2A
R521	3001062730010	Resistor 0603 27KΩ J 1/10W(RoHS)	B1C
R507	3001063920000	Resistor 0603 3.9KΩ J 1/10W(RoHS)	B2B
R547	3001064720000	Resistor 0603 4.7KΩ J 1/10W(RoHS)	B1B
R516	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1A
R517	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1A
R551	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1B
R552	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1B
R553	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1B
R554	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1B
R556	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1B
R557	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B1C
R514	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R515	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R524	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R525	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R526	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R527	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R528	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R529	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R530	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B

# Part List 1

## ■ Display Unit

Ref. No.	Material No.	Material Description	Address
R531	3001064730000	Resistor 0603 47KΩ J 1/10W(RoHS)	B2B
R504	3001065620010	Resistor 0603 5.6KΩ J 1/10W(RoHS)	B1B
R558	3001066820000	Resistor 0603 6.8KΩ J 1/10W(RoHS)	B1D
R545	3001161010000	Resistor 2010 100Ω 1/2W(RoHS)	B2C
R518	3001162290000	Resistor 2010 2.2Ω J 1/2W(RoHS)	B1D
R519	3001162290000	Resistor 2010 2.2Ω J 1/2W(RoHS)	B2D
R520	3001162700000	Resistor 2010 27Ω J 1/2W(RoHS)	B1D
VR1	3002994720010	Trimmer resistor 2.7*2.0*1.6 4.7KΩ ±25% MVR22HXB RN472 Rohm(RoHS)	B1A
C515	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B1C
C516	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B1C
C526	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B1C
C530	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B2A
C531	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B2A
C532	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B2A
C533	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B2A
C534	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	B2A
C527	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B1C
C522	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2A
C528	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2A
C529	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2A
C538	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2B
C506	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2C
C519	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2C
C520	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2C
C521	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2C
C523	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2C
C525	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	B2C
C511	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B1A
C512	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B1A
C502	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B1B
C509	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B2C
C510	3101061030010	Capacitor 0603 0.01UF K 25V(RoHS)	B2C
C503	3101061050060	Capacitor 0603 1UF K 10V MURATA(RoHS)	B2A
C505	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	B1B
C517	3101062200010	Capacitor 0603 22PF J 50V MURATA(RoHS)	B1B
C501	3101062230020	Capacitor 0603 0.022UF K 25V MURATA(RoHS)	B2B
C507	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B1D
C508	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B1D
C518	3101066800000	Capacitor 0603 68PF J 50V(RoHS)	B1B
C513	3104081060000	Ta-Capacitor 1206 10UF M 10V TMCMA1A106MTRF HITACHI(RoHS)	B1C
C535	3104081060000	Ta-Capacitor 1206 10UF M 10V TMCMA1A106MTRF HITACHI(RoHS)	B2A
C537	3104081060000	Ta-Capacitor 1206 10UF M 10V TMCMA1A106MTRF HITACHI(RoHS)	B2A
C514	3104084750000	Ta-Capacitor 1206 4.7UF K 16V TMCMA1C475KTR(RoHS)	B2C
L502	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	B2A
L503	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	B2A
L501	3221506601009	Chip ferrite bead 0603 600Ω±25% BLM18AG601SN1 MURATA(100MHz)	B1B
L504	3221506601009	Chip ferrite bead 0603 600Ω±25% BLM18AG601SN1 MURATA(100MHz)	B1B



## Part List 1

### ■ Display Unit

Ref. No.	Material No.	Material Description	Address
D517	3302030500029	Diode UDZSTE(1718B)18V SOD-323 Rohm	B2A
D507	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T1C
D511	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T1C
D512	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T2A
D509	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T2B
D510	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T2B
D505	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T2C
D508	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T2C
D506	3307110100009	Diode KPT-1608CGCK KINGBRIGHT	T2D
D515	3307110300009	Diode KA-3528 KINGBRIGHT	T1D
D501	3303060600009	Diode HSB123 SOT-343MOD HITACHI	B1C
D502	3303060600009	Diode HSB123 SOT-343MOD HITACHI	B1C
D503	3303060600009	Diode HSB123 SOT-343MOD HITACHI	B1C
D504	3303060600009	Diode HSB123 SOT-343MOD HITACHI	B1C
D514	3303060600009	Diode HSB123 SOT-343MOD HITACHI	B1C
D516	3303060600009	Diode HSB123 SOT-343MOD HITACHI	B1C
Q501	3403002000009	Transistor 2SB1132T100R PNP Rohm	B2B
Q503	3403003000069	Transistor 2SC4617TLS NPN Rohm	B1C
Q504	3403003000069	Transistor 2SC4617TLS NPN Rohm	B1C
Q508	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B2B
Q502	3403008000019	Transistor DTC114EE(TL) NPN Rohm	B2C
Q505	3410001000019	Transistor 2SA1641(S.T) PNP SANYO	B1C
Q507	3503010000019	Transistor 2SJ243-T1 P-channel NEC	B2A
Q506	3503020000039	Transistor 2SK1824-T1 N-channel NEC	B1B
IC501	3608002002089	IC TA7805F 5V Three Terminal Positive Voltage Regulators TOSHIBA	B2C
IC503	3610003003229	CPU uPD78F0112H 8-BIT NEC	B1B
IC502	3619006004290	IC R3111H421C 0.7v-10v RICOH(RoHS)	B2B
X501	3701098340020	Crystal 9.8304MHz NX8045GB 5*8 Chip NDK(RoHS)	B1B
F501	4001000000019	Fuse MINISMDC020-2 1812-0.2A Raychem	B2A
	410M800101210	TM-800 CN PCB FR4 1.6T/2L/4P(RoHS)	
J503	5202008100029	Chip socket 52746-0890 8pin molex	B1B
J504	5202011100019	Chip socket B11B-ZR-SM3-TF 11pin JST	B2D

# Part List 1

## ■ VCO Unit

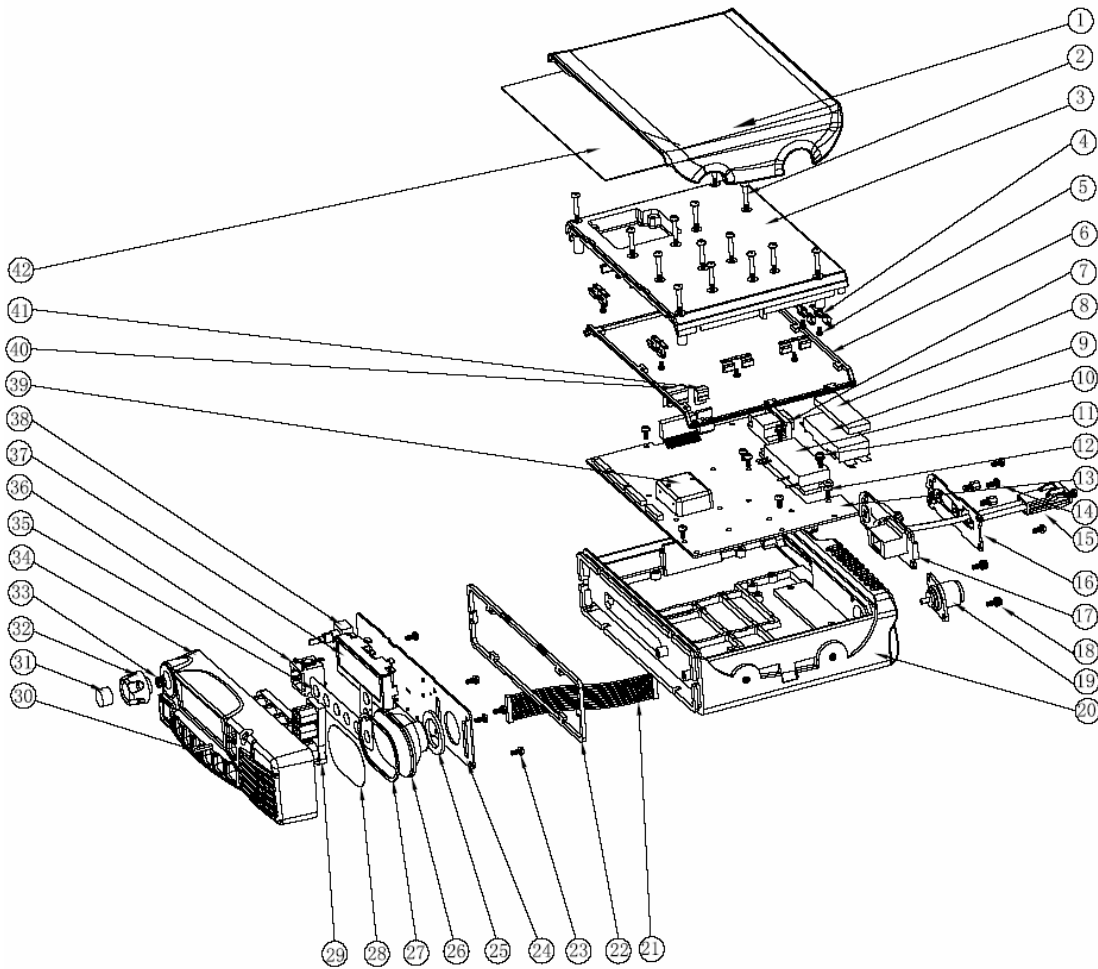
Ref. No	Part No.	Description	Address
R701	3001063300000	Resistor 0603 33 $\Omega$ J 1/10W RCT03330JTP(RoHS)	T2G
R702	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	T1G
R703	3001063300000	Resistor 0603 33 $\Omega$ J 1/10W RCT03330JTP(RoHS)	T2H
R704	3001062210000	Resistor 0603 220 $\Omega$ J 1/10W(RoHS)	T2H
R705	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T2I
R706	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T2G
R707	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T2I
R708	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	B2G
R709	3001061030010	Resistor 0603 10K $\Omega$ J 1/10W(RoHS)	T2G
R710	3001061040010	Resistor 0603 100K $\Omega$ J 1/10W(RoHS)	T2H
R711	3001062230000	Resistor 0603 22K $\Omega$ J 1/10W(RoHS)	T2H
R712	3001063310010	Resistor 0603 330 $\Omega$ J 1/10W RCT03331JTP(RoHS)	T2G
R713	3001064700000	Resistor 0603 47 $\Omega$ J 1/10W(RoHS)	T2G
R714	3001060000000	Resistor 0603 0 $\Omega$ J 1/10W(RoHS)	T2G
R715	3001062240010	Resistor 0603 220K $\Omega$ J 1/10W(RoHS)	T2G
R716	3001062710000	Resistor 0603 270 $\Omega$ J 1/10W(RoHS)	T1G
R717	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T1G
R718	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T1G
R719	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T2G
R720	3001064720000	Resistor 0603 4.7K $\Omega$ J 1/10W(RoHS)	T2G
C701	3101065600000	Capacitor 0603 56PF J 50V(RoHS)	T2H
C702	3101060200010	Capacitor 0603 2PF B 50V MURATA(RoHS)	T2G
C703	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T2G
C704	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T2H
C705	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T2G
C706	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T1I
C707	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T1G
C708	3101061020000	Capacitor 0603 1000PF K 50V GRM188R11H102KA01B MURATA(RoHS)	T1G
C709	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	T1G
C710	3101061000010	Capacitor 0603 10PF D 50V MURATA(RoHS)	T2H
C711	3101060800010	Capacitor 0603 8PF B 50V MURATA(RoHS)	T2H
C712	3101060300010	Capacitor 0603 3PF B 50V MURATA(RoHS)	T1G
C713	3101060600010	Capacitor 0603 6PF B 50V GRM1885C1H6R0B201D MURATA(RoHS)	T1G
C714	3101060500010	Capacitor 0603 5PF B 50V MURATA(RoHS)	T1G
C715	3101060390000	Capacitor 0603 0.3PF B 50V MURATA(RoHS)	T2G
C716	3101060300010	Capacitor 0603 3PF B 50V MURATA(RoHS)	T2G
C717	3101060200010	Capacitor 0603 2PF B 50V MURATA(RoHS)	T2G
C719	3101060590010	Capacitor 0603 0.5PF B 50V MURATA(RoHS)	T2G

# Part List 1

## ■ VCO Unit

Ref. No	Part No.	Description	Address
C720	3101060590010	Capacitor 0603 0.5PF B 50V MURATA(RoHS)	T1G
C721	3101061010010	Capacitor 0603 100PF J 50V GRM1882C1H101JA01B MURATA(RoHS)	T1H
C722	3101060700020	Capacitor 0603 7PF B 50V MURATA(RoHS)	T1H
C724	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B2G
C725	3101064710000	Capacitor 0603 470PF K 50V MURATA(RoHS)	B1G
TC701	3102992000049	Trimmer capacitor 3.2*2.5*1.25mm 10P 55V TZY2Z100A001	T2H
TC702	3102992000049	Trimmer capacitor 3.2*2.5*1.25mm 10P 55V TZY2Z100A001	T1H
L701	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	T2I
L702	3213212821009	Inductor 1008 0.82uH NL252018T-R82J Q(MIN)30 TDK	T2H
L703	3213212561000	Inductor 1008 0.56uH NLV25T-R56J-PF Q(MIN)30 TDK(RoHS)	T2G
L704	3212106180009	Inductor 0603 18nH HK160818NJ Q(MIN)12 TAIYO	T2H
L705	3234599180009	Coil C3328 18nH C3328A-18NG SAGMI	T2H
L706	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	T1I
L707	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	T1H
L708	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	T1G
L709	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	T1G
L710	3234599220009	Coil C6328 22nH C6328-22NG SAGMI	T1H
L711	3213212102009	Inductor 1008 1uH NL252018T-1R0J Q(MIN)30 TDK	T2G
D703	3304010100099	Diode 1SV282 1.6*0.8mm TOSHIBA	T2I
D704	3304010100099	Diode 1SV282 1.6*0.8mm TOSHIBA	T2H
D705	3304010100099	Diode 1SV282 1.6*0.8mm TOSHIBA	T1I
D708	3304010100099	Diode 1SV282 1.6*0.8mm TOSHIBA	T1H
D709	3304010100079	Diode 1SV278 1.6*0.8mm TOSHIBA	T2G
Q701	3503020000109	Transistor 2SK508NV(K52) SMD3 N-CH 5V NEC	T2G
Q702	3503020000109	Transistor 2SK508NV(K52) SMD3 N-CH 5V NEC	T1G
Q703	3401002000099	Transistor 2SC5108-Y(Te85L) NPN TOSHIBA	T2H
Q704	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	T2G
Q705	3401002000029	Transistor 2SC4116(GR) NPN TOSHIBA	T1G
Q706	3403008000019	Transistor DTC114EE(TL) NPN Rohm	T2G
	410M800100200	TM-800U PCB FR4 1.6T/4L/2P 02(RoHS)	
C718	3104081060000	Ta-Capacitor1206 10UF M 10V TMCMA1A106MTRF HITACHI(RoHS)	T2H

# Exploded View



## Part List 2

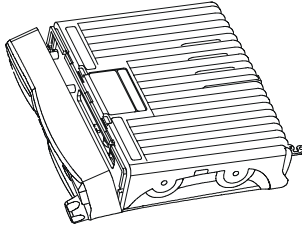
No.	Part No.	Part Description	Material	QTY	Remark
1	6000224000009	Rear cover	PC*ABS	1	
2	7102623020009	Self-tapping screws 2.6*23		14	
3	6300025000009	Shield cover	ADC12	1	
4	6201184000009	Shield sheet copper	COPPER	7	
5	7102004020049	Bolt PTS 2×4		7	
6	6100226000000	Seal gasket (shield)	Silica gel (50 degree hardness)	1	
7	5202015100039	15PIN Plug		1	
8	7600009000009	Shield cover conduction cloth (power amplification)			
9	6201190000009	Shield cover (power amplification module)		1	
10	3601004004139	Power amplification module		1	
11	7102508000109	Machine screws M2.5*8		2	
12	7102606020009	Self-tapping screws 2.6*6		6	
13	410M800101100	Main board	RMU800AV PCB FR4 1.6T/4L/2P	1	
14	7102606021009	Self-tapping screws 2.6*6 (T8 black zinc)		4	
15	4200100000009	Power cable (mobile radio, with jack)		1	
16	6201175000009	External board		1	
17	6100227000009	Seal gasket (external board)	Silica gel (50 degree hardness)	1	
18	7102508000109	Machine screws M2.5*8		2	
19	4405100001009	Antenna pedestal		1	
20	6300024000009	Aluminum chassis base		1	
21	4210100000109	Connecting line (mobile radio) with jack on both heads		1	
22	6100228000009	Seal ring (front case)	Silica gel (50 degree hardness)	1	
23	7102606020009	Self-tapping screws 2.6*6		11	
24	410M800101200	Control board	RMU800AV PCB FR4 1.6T/4L/2P	1	
25	7500070000009	Speaker sponge gasket	EVA	1	
26	5001020000009	Speaker 16 Ω 7W		1	
27	6100138000009	Speaker silica gel gasket	Silica gel (50 degree hardness)	1	
28	7400096000009	Speaker net		1	
29	6100136000009	Numeric key	Silica gel (70 degree hardness)	1	
30	6000231000009	Light guide	PMMA	1	
31	6000229000009	Switch button	PC+ABS	1	
32	6000227000009	Knob (vol)	PC+ABS	1	
33	6201179000009	Inner liner knob (vol)	COPPER	1	
34	6000223000009	Control panel	PC+ABS	1	

35	7300007100009	Contact rotary switch		1	
36	5205000000269	Jack (Remote SP MIC)		1	
37	5110000000119	RMU800ALCD (FSTN)		1	
38	4301030000000	Switch (channel)		1	
39	6201177000009	VCO cover		1	
40	6201181000009	Clip (power amplification cooler)		1	
41	6201182000009	Clip (power module cooler)		1	
42	7500072000009	Absorbing sponge		1	

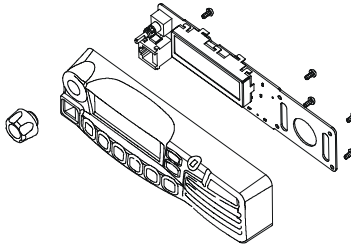
## Disassembly and Reassembly for Repair

### Disassembly

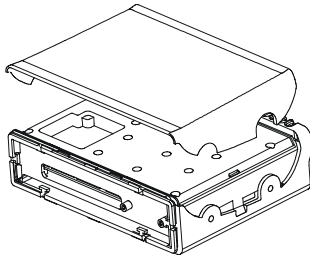
1. Power off the transceiver; disconnect the power cable and screw out the antenna connector.
2. Lift the tabs on the bottom of the transceiver, and then remove the panel from the transceiver.



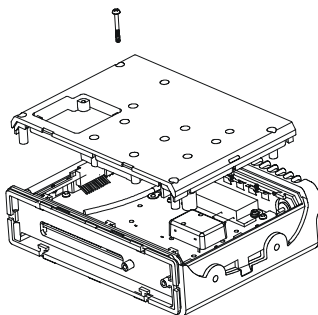
3. Pull out the selector knob, loosen the five screws and then remove the PCB board from the panel.



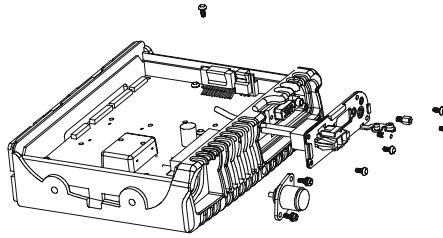
4. Lift the tabs on both sides of the transceiver, and then remove the rear cover.



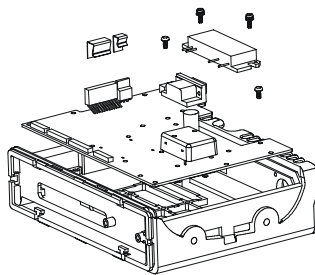
5. Loosen the screw, lift the tabs on the shield cover and then remove the shield cover.



6. Loosen the screw that binds the power cable (black) to the PCB board; loosen the screws on the external board and d15-pin plug; remove the external board and the waterproof packing.



7. Loosen the screw on the power amplification module; loosen by welding the connector that connects power amplification module to the main PCB, and then pull out the module.

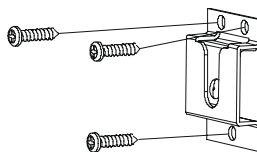


8. Loosen the screws on the main PCB board; lift the two clips (power amplification cooler), and take out the main PCB.

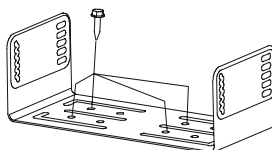
## Reassembly

For the reassembly of the transceiver, please refer to “Disassembly”. Other procedures are as follows:

1. Fix the bracket (Remote SP MIC) by using three self-tapping screws(white,4.0×16).

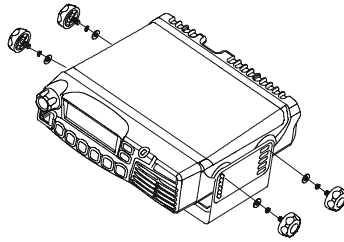


2. Fix the bracket (main unit of the transceiver) by using four or six self-tapping screws (black,4.8X20) .

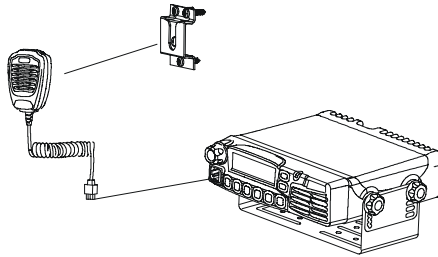




3. Screw on the four adjustment screws (each with one shrapnel and one shim).



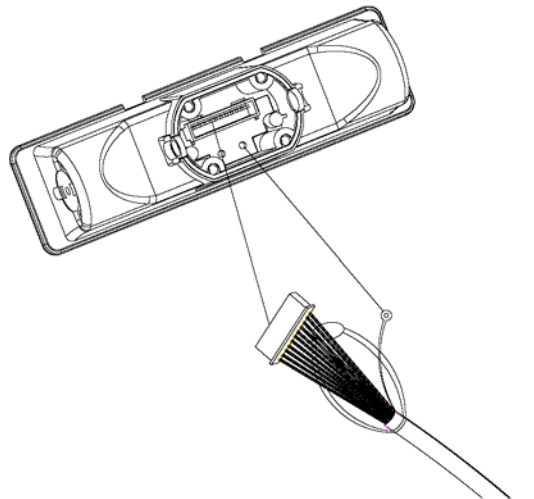
4. Plug the connector (Remote SP MIC) to the jack (Remote SP MIC); when the remote SP MIC is not in use, hang it on the bracket (Remote SP MIC).



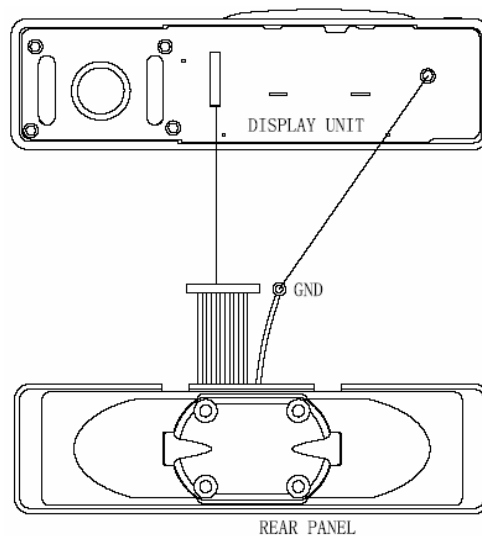
## Remote Kit Installation (Optional)

The remote kit is optional, the steps of installation as follow:

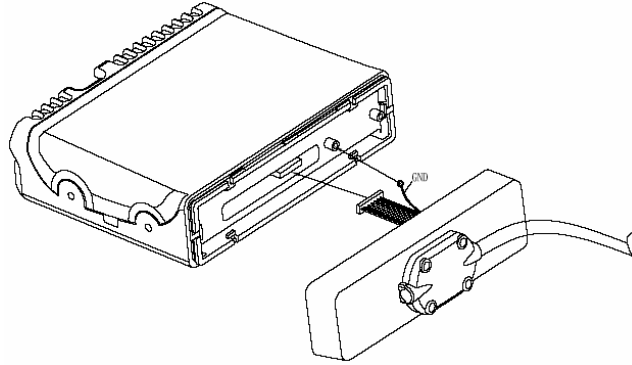
1. Lift the tab on the bottom of transceiver, and then pull the panel away from the transceiver.
2. Remove the connector that binds the display unit to the TX-RX unit.
3. As shown in the below figure, make sure that the rubber seal is placed above the cable, then plug the 11-pin connector into the rear panel socket.



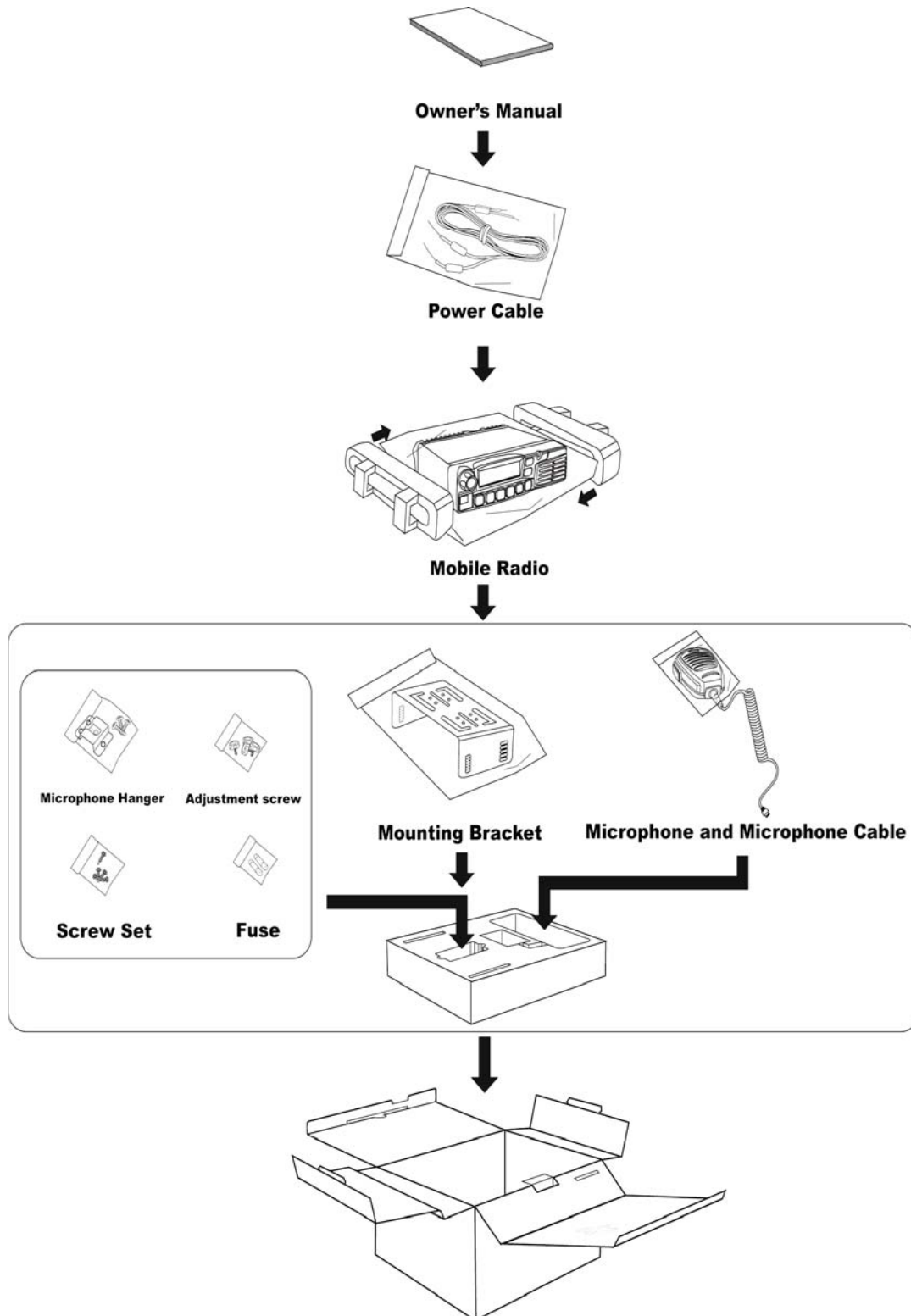
4. As shown in the above figure, affix the ground wire to the front panel chassis with the supplied screw.
5. Choose the remote wire position (right side or left side), then place the seal within the guide rail. Attach and secure the cover using the 4 binding screws.
6. Plug the 11-pin connector (from the front panel) to the PCB of Display unit socket, as shown in the below figure. Push the 11-pin connector (from the front panel) into the chassis so that the 6 tabs on top and bottom are securely fixed.



7. For the first three steps of the rear panel installation, please refer to step 3, 4 and 5.
8. Plug the connector from the front panel into the socket, as shown following. Affix the ground wire (from the rear panel) to the chassis with the supplied screw. Push and secure the main panel so that the 6 tabs on the top and bottom of panel are securely fixed.



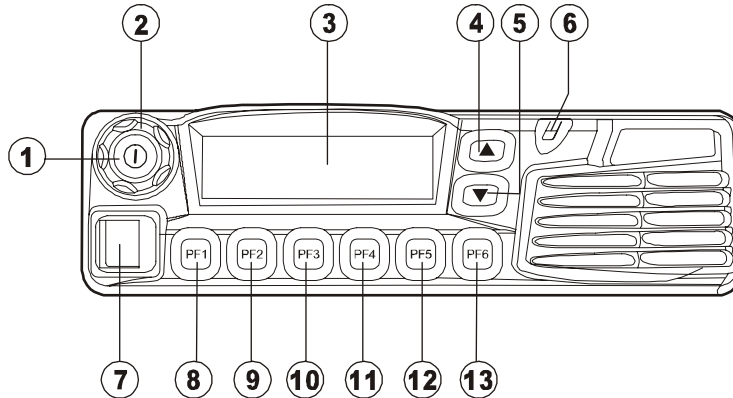
## Packing



# Adjustment

## 1. Key Functions

### 1-1 Front Panel



1. Power switch.    2. Selector Knob.    3. LCD Display.    4. Down key.    5. Up key.  
 6. Indicator light.    7. Microphone Jack.    8. PF1 key.    9. PF2 key.    10. PF3 key.  
 11. PF4 key.    12. PF5 key.    13. PF6 key.

### 1-2 Panel Test Mode

■ When the Function is Off( ▽ does not appear )

Controls	Function	Description
Up	Volume up.	
Down	Volume down.	
PF1	Wide/narrow changeover.	
PF2	Noise squelch switch.	When the squelch is on, ▽ appears.
PF3	Test mode/ Tuning mode changeover.	
PF4	Active expand function.	After pressing PF4 key, press PF1, PF2 and PF3 to active the following functions (See the table below).
PF5	Signalling up.	
PF6	Signalling down.	
Selector Knob	Test channel up/down.	

■ When the Function is On (press PF4, ▼ appears)

Controls	Function	Description
PF1	Compander on/off.	When compander opens, ▼ appears.
PF2	Beat shift on/off.	When the remove frequency is on, “A” appears.
PF3	MSK 1200/2400bps changeover.	When MSK is 2400bps, “✉” appears.
PF4	Return to test mode.	
PF5	No function.	
PF6	No function.	

### 1-3 Panel Tuning Mode

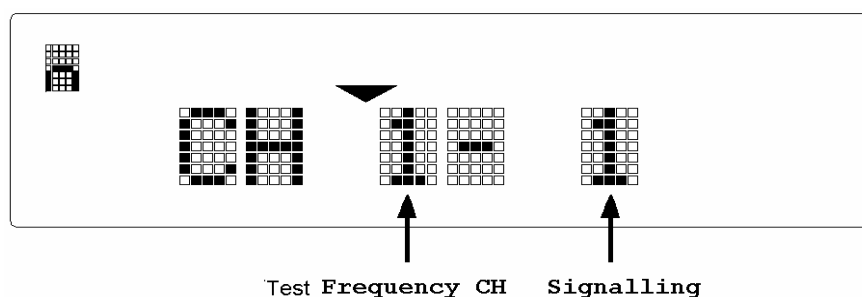
Controls	Function	Description
Up	Volume up.	
Down	Volume down.	
PF1	Test mode/tuning mode changeover.	
PF2	Noise squelch switch.	When the squelch is on, 🔊 appears.
PF3	No function.	
PF4	Tuning item down.	
PF5	Tuning item up.	
PF6	Tuning value save and then move to the next tuning item.	
Selector Knob	Tuning value up/down.	

## 2. Panel Test Mode

The transceiver’s transmission output, receiver sensitivity, and other items are measured and QT, DQT, 2-Tone, MSK and DTMF signalling is decoded in this mode.

### 2-1. To Enter the Test Mode

Hold down [PF2] key and turn the power switch on to enter test mode. The test frequency channel and test signalling channel will be displayed.



## 2-2. Test Frequency Channel (MHz)

In this mode, the test channel frequency (center(C)、low(L)、high(H) frequency) can be modified through the programming software.

Model	RX/TX	1 ( C )	2 ( L )	3 ( H )	4	5	6	7	8
0 (V)	RX(MHz)	155.15	136.15	173.85	145.55	164.55	155.00	155.20	155.40
	TX(MHz)	155.00	136.00	174.00	145.50	164.50	155.00	155.20	155.40
1 (U2)	RX(MHz)	481.15	450.15	511.85	465.55	496.55	481.00	481.20	481.40
	TX(MHz)	481.00	450.00	512.00	465.50	496.50	481.00	481.20	481.40
2 (U5)	RX(MHz)	375.15	350.15	399.85	362.55	387.55	375.00	375.20	375.40
	TX(MHz)	375.00	350.00	400.00	362.50	387.50	375.00	375.20	375.40
3 (U1)	RX(MHz)	435.15	400.15	469.85	417.55	452.55	435.00	435.20	435.40
	TX(MHz)	435.00	400.00	470.00	417.50	452.50	435.00	435.20	435.40
4 (U4)	RX(MHz)	465.15	440.15	489.85	452.55	477.55	465.00	465.20	465.40
	TX(MHz)	465.00	440.00	490.00	452.50	477.50	465.00	465.20	465.40
5 (U3)	RX(MHz)	503.15	480.15	525.85	491.75	515.25	503.00	503.20	503.40
	TX(MHz)	503.00	480.00	526.00	491.70	515.20	503.00	503.20	503.40
6 (U6)	RX(MHz)	425.15	400.15	449.85	412.55	437.55	425.00	425.20	425.40
	TX(MHz)	425.00	400.00	450.00	412.50	437.50	425.00	425.20	425.40

## 3. Panel Tuning Mode

The Transceiver is adjusted in this mode.

### 3-1 To Enter The Panel Tuning Mode.

Press the [PF3] key in the panel test mode.




The adjustment items, the frequency and signalling, other than the maximum deviation and sensitivity, return to the values that were effective for the test frequency channel and test signalling channel before entering the panel tuning mode.

No.	Dealer Mode	LCD Display
1	Frequency stability	Frequency
2	TX power	Tx Power
3	Max. frequency deviation	Max.Deviate
4	CDCSS balance	CDCSSBalance
5	CTCSS frequency deviation	CTCSSDeviate
6	CDCSS frequency deviation	CDCSSDeviate
7	DTMF frequency deviation	CDCSS Deviate
8	MSK frequency deviation	MSK Deviate
9	Single tone frequency deviation	Tone Deviate
10	RX sensitivity	Rx Sensitivi
11	Squelch open level	OpenSQL
12	Squelch close level	CloseSQL

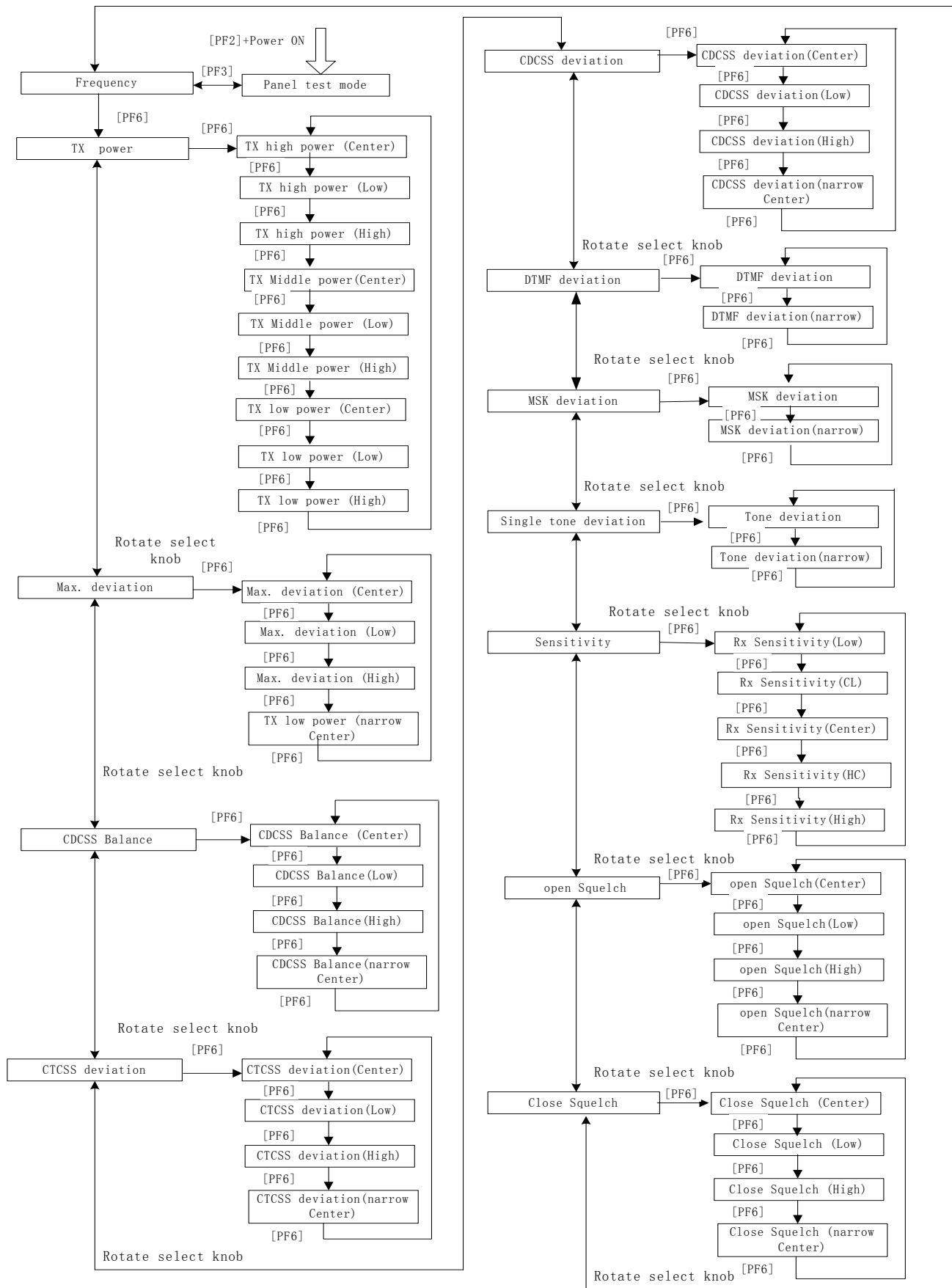
### 3-2. Tuning Item and Display

Refer to “5. Setting Items” in “Test Mode”.

### 3-3. Flow Chart

1.   : Use the [PF4] and [PF5] keys.
2.  : Use the [PF6] key.
3. Use the [SELECTOR] knob to set an adjustment value (1 to 256) for each adjustment item.
4. Use the [PF6] key to move to the next item.

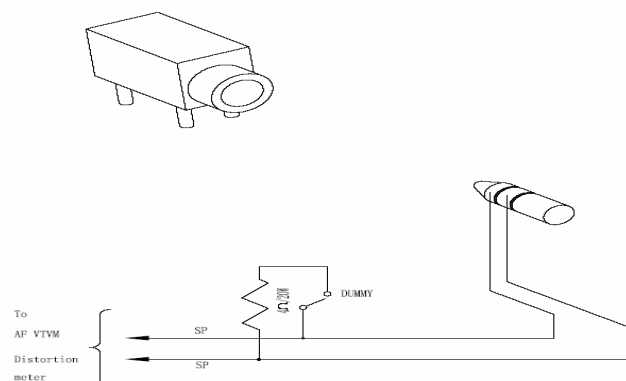




## 4. Test Equipment Required for Alignment

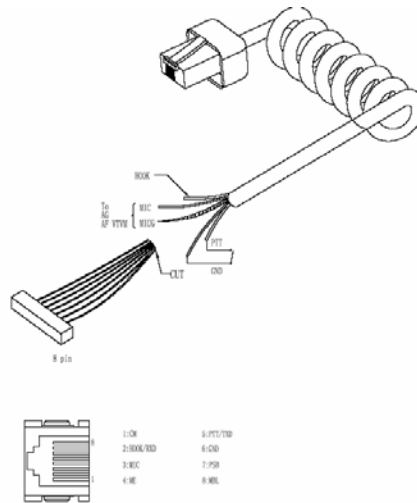
Test Equipment	Method	Major Specifications
Standard Signal Generator (SSG)	Frequency Modulation Output	450 to 512 MHz Frequency modulation and external modulation 0.1uV to greater than 1mV
Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 450 to 512 MHz or more Vicinity of 50W
Deviation Meter	Frequency Range	450 to 512 MHz
Digital Volt Meter (DVM)	Measuring Range Accuracy	1 to 20V DC High input impedance for minimum circuit loading
Oscilloscope		DC through 30MHz
High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 600MHz 0.2ppm or less
Ammeter		13A or more
AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz 3mV to 3V
Audio Generator (AG)	Frequency Range Output	50Hz to 5kHz 0 to 1V
Distortion Meter	Capability Input level	3% or less at 1kHz 50mV to 10Vrms
Voltmeter	Measuring Range Input Impedance	10 to 1.5V DC or less 50kΩ/V or greater
4Ω Dummy Load		Approx.4Ω,20W
Regulated Power Supply		13.6V,approx.20A (adjustable from 9 to 20V) Useful if anneter required

### 4-1 Test Cable for Speaker Output



## 4-2. Test Cable for Microphone input

The following test cable is recommended.



## 5. Warnings When Removing or Installing the Shield Cover

1. When handling with the shielding cover, do not damage the components on the TX-RX unit.
2. When installing the shielding cover, insert the cover from the rear side.
3. When removing the shielding cover, squeeze the hole marked with an arrow as shown on the diagram and pull it straight up.

## Adjustment Description

The radio can be adjusted by PC programming software or by manual adjustment. Manual adjustment procedure of RMU800A is as follows. (Refer to “Test Mode” and “Adjustment mode” in the section Radio Modes.)

### Instrument:

Radio Communication Test Set	1 set
Scanner	1 set
20A/30V Power Supply	1 set
Digital Voltmeter	1 set
Power Meter	1 set
Signal Line (with dummy load)	1 pcs

### Adjustment:

#### 1. Download

- Connect the radio with PC by programming cable; Turn the radio on.
- Click “Download” on software interface;
- Select the desired program and click “Open”, download starts.
- Click “End” when download is completed.
- Turn the radio off and remove the programming cable.

#### 2. Initialization

It's necessary to set the frequency and initialize the radio before adjustment because there is no needed information in FLASHROM when the radio is manufactured.

- Turn the power on while holding down [PF2], then press [PF3], [PF4] and [PF6] in sequence.
- The LED on control panel turns green from red, indicating that the initialization is completed.

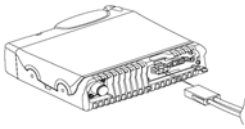
#### 3. Adjustment

Some items can be adjusted in conventional mode and the others in manual adjust mode.

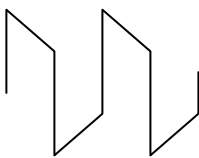
- Turn the power on to enter conventional mode.
- Switch the power off and back on while holding down [PF6], the radio enters manual adjust mode.  
The channel number is displayed on the LCD.
- Frequency list

Model	RX/TX	1 ( F C )	2 ( F L )	3 ( F H )	4	5	6	7	8
0 (V)	RX(MHz)	155.15	136.15	173.85	145.55	164.55	155.00	155.20	155.40
	TX(MHz)	155.00	136.00	174.00	145.50	164.50	155.00	155.20	155.40
1 (U2)	RX(MHz)	481.15	450.15	511.85	465.55	496.55	481.00	481.20	481.40
	TX(MHz)	481.00	450.00	512.00	465.50	496.50	481.00	481.20	481.40
2 (U5)	RX(MHz)	375.15	350.15	399.85	362.55	387.55	375.00	375.20	375.40
	TX(MHz)	375.00	350.00	400.00	362.50	387.50	375.00	375.20	375.40
3 (U1)	RX(MHz)	435.15	400.15	469.85	417.55	452.55	435.00	435.20	435.40
	TX(MHz)	435.00	400.00	470.00	417.50	452.50	435.00	435.20	435.40
4 (U4)	RX(MHz)	465.15	440.15	489.85	452.55	477.55	465.00	465.20	465.40
	TX(MHz)	465.00	440.00	490.00	452.50	477.50	465.00	465.20	465.40
5 (U3)	RX(MHz)	503.15	480.15	525.85	491.75	515.25	503.00	503.20	503.40
	TX(MHz)	503.00	480.00	526.00	491.70	515.20	503.00	503.20	503.40
6 (U6)	RX(MHz)	425.15	400.15	449.85	412.55	437.55	425.00	425.20	425.40
	TX(MHz)	425.00	400.00	450.00	412.50	437.50	425.00	425.20	425.40

## VCO

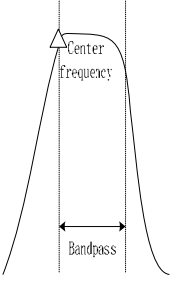
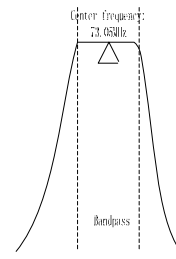
Item	Condition	Measurement		Adjustment		Specification /
		Test Instrument	Terminal	Part	Method	Remarks
1. Power supply	1.Power supply voltage DC13.6V	 <p><b>Note:</b> 1. This radio may be installed in negative ground electrical systems only. Reverse polarity will cause the cable fuse to blow. Check the vehicle ground polarity before installation to prevent wasted time and effort.</p> <p>2. If DC power is to be controlled by the vehicle ignition switch, a switching relay should be used to switch the positive power lead. The vehicle ignition switch then controls DC to the relay coil.</p>				
2. VCO lock voltage (TX)	1.CH: TX HI	Digital Voltmeter	CV	TC1	7.1V±0.1V	
	2.CH: TX LO				Check	>1.8V
3. VCO lock voltage (RX)	1.CH: RX HI			TC2	7.1V±0.1V	
	2.CH: RX LO				Check	>1.8V

**Transmitter**

Item	Condition	Measurement		Adjustment		Specification
		Test Instrument	Terminal	Part	Method	/Remarks
4.TX Frequency	Enter adjustment item "1", each Ch corresponds to a specific TX Freq	Radio Communication Test Set	ANT	Adjust software settings	Adjust to CH frequency	Error <50Hz
5.TX Power	Each Ch corresponds to a specific TX Freq, enter adjustment item "2", adjust H/M/L power	Radio Communication Test Set Ammeter	ANT	Adjust software setting(first value is 220)and VR101, press [PF6] to save and enters the next item.	High power: PO=45±1.0W I≤12.0A	Check High power
					Middle power: PO=25±1.0W I≤8.0A	Check Middle power
					Low power: PO=5±0.5W I≤5.0A	Check Low power
6. Max. Deviation	1. Each Ch corresponds to a specific TX Freq, enter adjustment item "3", turn to CH (C), CH(L), CH(H), CH(nC)	Radio Communication Test Set FILTER: 0.05-15KHz AF:1KHz 50mV	ANT MIC Jack	Adjust software settings, press [PF6] to save and enters the next item	Check deviation at CH L/C/H: 3.75±0.1KHz(W)	
					Check deviation at CH L/C/H: 1.75±0.1KHz (N)	
7. Modulation Sensitivity	1. Each Ch corresponds to a specific TX Freq	Radio Communication Test Set FILTER: 0.05-15KHz AF:1KHz 5mV	ANT MIC Jack		Check deviation: 2.6KHz-3.4KHz (W) 1.3KHz-1.7KHz (N)	Check
8. Modulation Distortion					≤3%	
9.CDCSS Balance	Each Ch corresponds to a specific TX Freq, enter adjustment item "4"	Radio Communication Test Set FILTER LPF: 300Hz	ANT	Change CDCSS settings with Selector Knob		Check waveform

10.CTCSS Deviation	Each Ch corresponds to a specific TX Freq, enter adjustment item "5", adjust 67Hz/127.3Hz/254.1Hz CTCSS	Radio Communication Test Set FILTER LPF: 300Hz	ANT	Change CTCSS settings with Selector Knob	Adjust deviation to 0.75KHz±0.10KHz (W) 0.37KHz±0.05KHz (N)	
11. CDCSS Deviation	Each Ch corresponds to a specific TX Freq, enter adjustment item "6"	Radio Communication Test Set FILTER LPF: 300Hz	ANT	Change CDCSS settings with Selector Knob	Adjust deviation to 0.75KHz±0.10KHz (W) 0.37KHz±0.05KHz (N)	
12.DTMF Deviation	Each Ch corresponds to a specific TX Freq, enter adjustment item "7"	Radio Communication Test Set FILTER LPF: 3KHz	ANT	Change DTMF settings with Selector Knob	3.0KHz±0.1KHz (W) 1.5KHz±0.1KHz (N)	
13.MSK	Each Ch corresponds to a specific TX Freq, enter adjustment item "8"	Radio Communication Test Set FILTER LPF: 3KHz	ANT	Change MSK settings with Selector Knob	3.0KHz±0.1KHz (W) 1.5KHz±0.1KHz (N)	
14.2TONE/5TONE	Each Ch corresponds to a specific TX Freq, enter adjustment item "9"	Radio Communication Test Set FILTER LPF: 3KHz	ANT	Change 2-tone/5-tone settings with Selector Knob	Adjust deviation to 3.0KHz±0.10KHz (W) 1.5KHz±0.1KHz (N)	

**Receiver**

Item	Condition	Measurement		Adjustment		Specification
		Test Instrument	Terminal	Part	Method	/Remarks
15.RF bandpass filter	Enter adjustment item "10", each Ch corresponds to a specific RX Freq	Scanner	ANT. TP1	Adjust software settings	Adjust the gain to the Max. value, the corresponding freq is on the left most to bandpass waveform. Press [PF6] to save.	
16.IF bandpass filter	Center Freq is 73.05MHz	Scanner		Adjust L107、TC101、L151、L108、TC102、L150。	Adjust L107.TC101.L151 (narrow); L108、TC102、L150(wide)	
17.max SINAD	CH: RX Center, turn to CH1(C); corresponds to a specific RX Freq	Radio Communication Test Set SSG output: -47dBm MOD:1KHz DEV:±3KHz(W) ±1.5KHz(N) FILTER: 0.3-3.0KHz	ANT SP Jack	L135	Adjust the L135 to maximize SINAD	The max volume : 4.6V or higher
18. Sensitivity	1.CH: RX Center, turn to CH1(C) in manual adjust mode	Radio Communication Test Set SSG output: -116dBm MOD:1KHz DEV:±3KHz(W) ±1.5KHz(N) FILTER: 0.3-3.0KHz	ANT SP Jack	W/N switch (turn on power while holding down [PF6] to enter Channel Set Mode)	[UP]/ [DOWN] to change channel Check	SINAD: 12dB or higher
	2. CH: RX LO, turn to CH2(L) in manual adjust mode					
	3.CH:RX HI, turn to CH3(H) in manual adjust mode					



19.SQ Open	Enter adjustment item "11", turn to CH (H), CH(C), CH (L)	Radio Communication Test Set SSG output: -119dBm (level 3)	ANT SP Jack	Adjust software setting	Adjust software settings at SQL3 and SQL9, press [PF6] to save.	Press [PF2] to adjust software settings , open the squelch while the value is changeless
		SSG output -111dBm (level 9)				
20.SQ Close	Enter adjustment item "12", turn to CH (H), CH(C), CH (L)	Radio Communication Test Set SSG output: -123dBm (level 3)	ANT SP Jack	Adjust software setting	Adjust software settings at SQL3 and SQL9, press [PF6] to save.	Press [PF2] to adjust software settings, close the squelch while the value is changeless
		SSG output: -115dBm (level 9)				
21. Distorsion	1.CH: RX Center	Radio Communication Test Set SSG output: -60dBm	ANT SP Jack	FILTER: 0.3-3.0KHz	Check	DIS≤5%
22. S/N						S/N≥48 (W) S/N≥42 (N)

Note: The radio must be covered with aluminum chassis when adjusting sensitivity; Connect an RF power meter to the antenna connector while TX; Connect a SINAD meter with a 16ohm load to the external [SP] jack.

## Terminal Function

### 1. Display Unit

Pin No.	Name	Description
J501 (To MIC Jack)		
1	MBL	MIC backlight control signal output. "H": On, "L":Off.
2	PSB	Power outputs after power switch (13.6V $\pm$ 15%).
3	GND	Ground.
4	PTT/TXD	PTT signal input/ Serial data output.
5	ME	MIC ground.
6	MIC	MIC signal input.
7	HOOK/RXD	Hook signal input/ Serial data input.
8	CM	Serial data input for keypad MIC.
J503(To DISPLAY UNIT)		
1	VCC	+5V.
2	E	Ground.
3	LCDCK	Clock output for LCD driver.
4	LCDW	LCD data write.
5	LCDR	LCD data read.
6	LCDCS	LCD control signal output.
7	LCD	LCD display contrast.
8	LAMP	Power for backlight.
J504 (To DISPLAY UNIT)		
1	ME	MIC ground.
2	MIC	MIC signal output.
3	E	Ground.
4	REST	Reset signal input.
5	TXD2	Serial data output.
6	RXD2	Serial data input.
7	E	Ground.
8	PSW	Power switch control signal output.
9	SB	Power input after power switch (13.6V $\pm$ 15%).
10	SP1	BTL input for remote speaker output.
11	SP2	BTL input for remote speaker output...
J505 (To Speaker)		
1	SP1	BTL input for remote speaker output.
2	SP2	BTL input for remote speaker output.

## 2. TX-RX Unit

Pin No.	Name	Description
J101 (To DISPLAY UNIT)		
1	ME	MIC ground.
2	MIC	MIC signal output.
3	E	Ground.
4	REST	Reset signal input.
5	TXD2	Serial data output.
6	RXD2	Serial data input.
7	E	Ground.
8	PSW	Power switch control signal output.
9	SB	Power input after power switch (13.6V $\pm$ 15%).
10	SP1	BTL input for remote speaker output.
11	SP2	BTL input for remote speaker output.
J104 (To VCO UNIT)		
1	ST	TX RX switch.
2	HT	RF output.
3	E	GND.
4	8C	+8V.
5	MD	Modulate output.
6	CV	Control voltage.
J108(To POWER)		
1	+B	+13.6V $\pm$ 0.5V
J110(To EXTSP)		
Pin No.	Name	Description
1	OUT2	Output to speaker.
2	SP2	BTL input for remote speaker output.
3	SP1	BTL input for remote speaker output.
4	GND	GND.

Pin No.	Name	Description
<b>J111 (at the rear panel; to Secondary Development Interface)</b>		
1	TXD0	Serial data input.
2	RXD0	Serial data output.
3	MIC2	External MIC signal output.
4	ME	MIC ground.
5	AFO	Filtered Audio output.
6	AUX5	Programmable auxiliary port.
7	AUX4	Programmable auxiliary port.
8	AUX3	Programmable auxiliary port.
9	HRO	Horn Relay Output.
10	HRI	Horn Relay Input.
11	PA1	MIC signal output.
12	PA2	MIC signal output.
13	E	Ground.
14	SB	Power input after power switch (13.6V $\pm$ 15%).
15	IGN	Ignition sense input.
<b>J109 (To Secondary Development Interface or Data Encryption and Decryption)</b>		
1	8C	+8V.
2	E	GND.
3	SB	Power input after power switch (13.6V $\pm$ 15%).
4	AUX1	Programmable auxiliary port.
5	AUX6	Programmable auxiliary port.
6	AUX7	Programmable auxiliary port.
7	NC	No Connection.
8	RSSI	Receiver Signal Strength Indication.
9	CTO	CDCSS signal output.
10	PCO	Transmitting Power Control Output.
11	UL	Unlock detection signal output.
12	MII	Transmitting audio input.
13	MIO	Transmitting audio output.
14	AFI	Filtered Audio input.
15	AFO	Filtered Audio output.
<b>J102 (To Secondary Development Interface or SMARTUNK)</b>		
1	TXD1	Serial data output.
2	RXD1	Serial data input.
3	AUX5	Programmable auxiliary port.
4	DEO	Receive signal detection.
5	DI	Data modulate input.
6	ALT	Alert hint input.
7	5V	+5V.

8	E	GND.
9	AUX1	Programmable auxiliary port.
10	AUX3	Programmable auxiliary port.
11	AUX4	Programmable auxiliary port.
12	AUX2	Programmable auxiliary port.
13	DTMFIO	DTMF input/output.
14	TXD0	Serial data output.
15	RXD0	Serial data input.
J112 (To GPS)		
1	TXD1	Serial data output.
2	RXD1	Serial data input.
3	3.3V	+3.3V.
4	E	Ground.
5	5V	+5V.

# Specifications

<b>Frequency Range</b>	<b>450 MHz—512MHz</b>
Number of Channels (Zone)	Conventional CH:Max.512 (Max 256 zone)
Channel Spacing	25/12.5KHz
PLL Step	5/6.25
Power Supply	13.6V±15%
Duty Cycle	Transmit: 20%
Operation Temperature	-30℃~~+60℃
Frequency Stability	±2.0ppm
Antenna Impedance	50Ω
Dimensions (W×H×D)	175mm×48mm×170mm
Weight(net)	1.9kg
<b>Transmitter</b>	
RF Power Output (H/M/L)	45W/25W/5W
Adjacent Channel Power	70 dB (W)/60dB(N)
Modulation Limit(CTCSS/CDCSS)	5/2.5KHz
Spurious Response	80dB
FM S/N	48 dB (W)/42dB(N)
AM S/N	34dB
MIC Sensitivity	91dB
Modulation Distortion	<3%
Modulation S/N(CTCSS/CDCSS)	35dB(W)/30dB(N)
<b>Receiver</b>	
Sensitivity	0.35μV
Adjacent Channel Selectivity	75 dB (W) / 65dB(N)
Intermodulation	75 dB (W) / 65dB(N)
Spurious and Image Rejection	80dB
Type of Emission	Wide:16K0F3E,20K0F1D/Narrow:11K0F3E,11K2F1D
FM S/N	48 dB (W)/42dB(N)
External Audio Output	12W (@4Ω 3% distortion),20W (@4Ω 10% distortion)
Internal Audio Output	3W (@16Ω 3% distortion), 5W (@16Ω 10% distortion)

## Appendix 1 Entering Characters

### Entering characters with an optional microphone keypad

KEY	CHARACTER								NUMBER	REMARKS
	Number of times key is pressed									
	1	2	3	4	5	6	7	8		
1	Space								1	Each key can generate numeric and character information. Pressing a key will cause the first character of the key's character cycle to appear on the LCD; Subsequent pressing of the same key will cause subsequent characters in the cycle to appear. For example, to enter the character "S", press the "7" key four (4) times.
2	A	B	C	a	b	c			2	
3	D	E	F	d	e	f			3	
4	G	H	I	g	h	i			4	
5	J	K	L	j	k	l			5	
6	M	N	O	m	n	o			6	
7	P	Q	R	S	p	q	r	s	7	
8	T	U	V	t	u	v			8	
9	W	X	Y	Z	w	x	y	z	9	
0									0	
A	@	!	#	\$	%	^	&	~		
B	+	-	*	/	=	\	_			
C	(	)	<	>	[	]	{	}		
D	,	.	?	:	;	"	'	`		
*	Press to toggle between number and character									
#	Press to clear the input									
PTT	Enter (Complete programming and store)									

### Entering characters without a keypad

- Turn Selector Knob to choose the character to be entered.
- Press the [PF2] key to toggle among number, uppercase letter, lowercase letter, symbol and Latin.
- Press the [PF3] / [PF4] key to move the cursor forward/backward.
- Press the [PF1] key to clear the input.
- Press the [PF6] key to confirm the input.